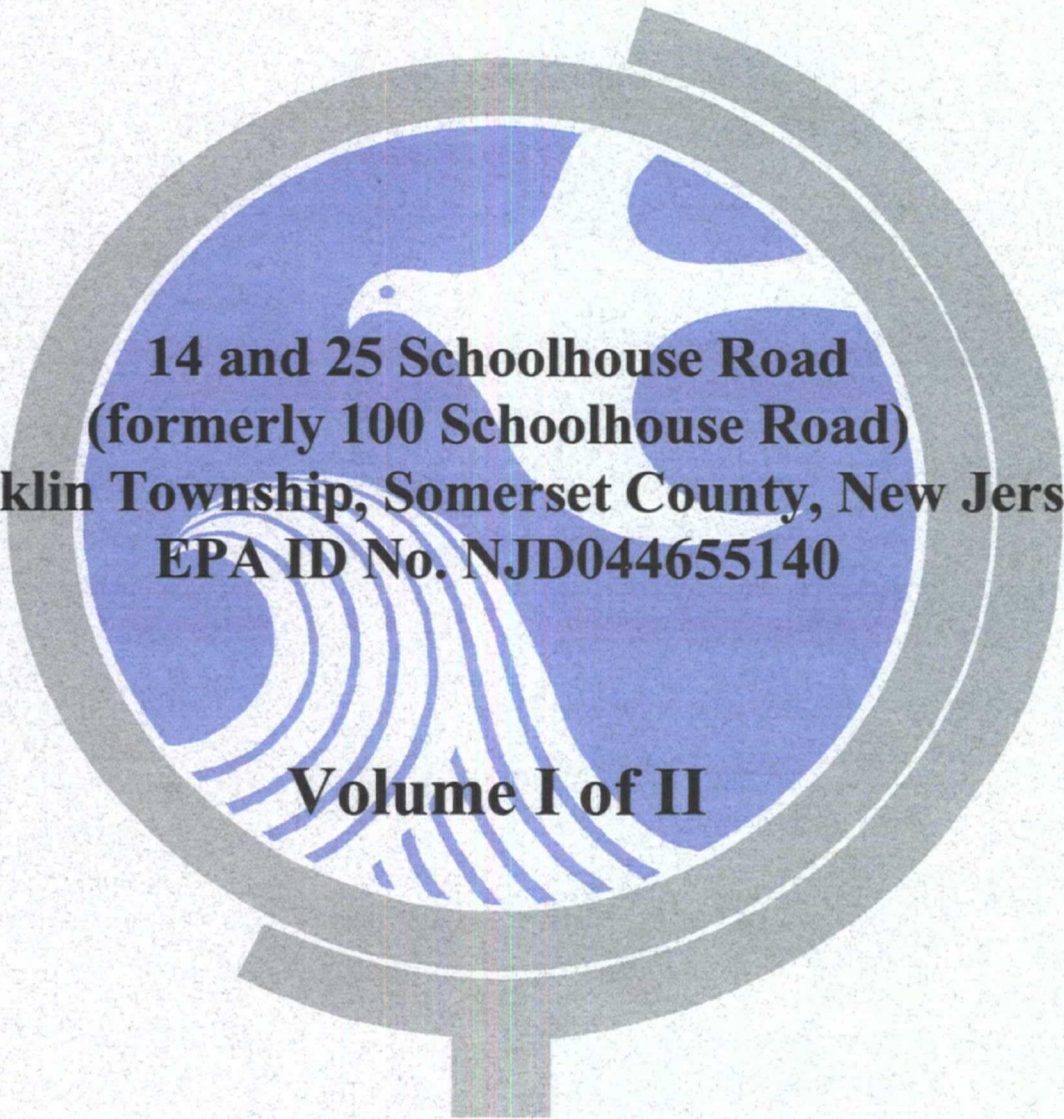


# **SITE REASSESSMENT**

## **SGS THOMSON MICRO ELECTRONICS**



**14 and 25 Schoolhouse Road  
(formerly 100 Schoolhouse Road)  
Franklin Township, Somerset County, New Jersey  
EPA ID No. NJD044655140**

**Volume I of II**

**New Jersey Department of Environmental Protection  
Site Remediation Program  
Publicly Funded Remediation Element  
Bureau of Environmental Measurements and Site Assessment**

**October 2010**

**USEPA COPY**

267061



**SGS THOMSON MICRO ELECTRONICS**  
14 and 25 Schoolhouse Road  
(formerly 100 Schoolhouse Road)  
Franklin Township, Somerset County, New Jersey 08873  
EPA ID No. NJD044655140

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**NARRATIVE**



## **SITE REASSESSMENT REPORT**

**SGS THOMSON MICRO ELECTRONICS**  
14 and 25 Schoolhouse Road  
(formerly 100 Schoolhouse Road)  
Franklin Township, Somerset County, New Jersey 08873  
Block 517.02, Lot 20.01 (25 Schoolhouse Road)  
Block 514, Lot 20.01 (14 Schoolhouse Road)

Latitude: 40.527778

Longitude: 74.573333

EPA ID No. NJD044655140

### **INTRODUCTION**

The United States Environmental Protection Agency (EPA) has tasked the New Jersey Department of Environmental Protection (NJDEP) with a Site Reassessment to gather and evaluate new information on SGS Thomson Micro Electronics located in Franklin Township, Somerset County, to determine whether further action under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) is needed. (Attachment A)

A Preliminary Assessment (PA) was completed for the site by EBASCO Services, Inc. for the EPA in September 1992. (Attachment B)

A Letter of No Further Action (NFA) was issued by the Department on September 12, 1996 for operations of SGS starting from October 10, 1989. (Attachment C)

On September 9, 2008 a NJDEP No Further Action for the entire site (**14 and 25 Schoolhouse Road**) for unrestricted use (NFA-E) and Covenant Not to Sue was issued to Capital Health 406, LLC. The NFA-E was based on the PA and SI reports submitted by Cardinal Health 406, LLC.

### **SITE LOCATION**

The SGS Thomson Micro Electronics site is located 14 and 25 Schoolhouse Road (formerly known collectively as 100 Schoolhouse Road) in Franklin Township, Somerset County, New Jersey. The surrounding land use is mixed light industrial, agricultural and residential. Schoolhouse Road forms the northern boundary of 14 Schoolhouse Road and the southern boundary of 25 Schoolhouse Road. Cottontail Lane is to the west and Belmont Drive is to the east of 25 Schoolhouse Road. Heller Park Lane is to the west and Elizabeth Avenue is to the east of 14 Schoolhouse Road.

### **SITE HISTORY**

The SGS Thomson Micro Electronics (SGS) site is a 48 acre site located at 14 and 25 Schoolhouse Road in Franklin Township, Somerset County, New Jersey. The subject property

was farmland until 1969 when Microwave Semiconductor Corporation (MSC), an independent merchant supplier of microwave power semiconductors and modules, began operating on-site as a division of Siemens MC, Inc. (Siemens). MSC designed, assembled and tested silicon microwave power semiconductors, system components and subsystems for advanced telecommunications, radar and electronic warfare applications. MSC's facility consisted of "north building" and a pole barn on the northern side of Schoolhouse Road (Block 517.02, Lot 20.01; 25 Schoolhouse Road) and a "south building" and a process building on the southern side of Schoolhouse Road (Block 514, Lot 20.01; 14 Schoolhouse Road). (Maps 2 through 4)

From 1969 to 1989, the subject site was known as 100 Schoolhouse Road.

MSC manufactured both silicon and gallium arsenide transistors during their ownership from 1969 to 1989. MSC's operations during this time included degreasing, washing, cleaning, plating and etching. MSC used chemicals such as freon, 1,1,1-trichloroethane, isopropyl alcohol, acetone, methanol, gallium arsenide, gold, chromium, nickel, and several types of acids. The company neutralized the acid waste onsite. The remainder of the waste generated was transported and disposed of by licensed waste haulers. (Attachment B)

In July 1985 an Environmental Impact Assessment (EIA) was performed at the site for the proposed addition of the research and electronics facility. The investigation concluded that the new building would have very few environmentally adverse affects on the property or the community. The building was built in 1986 and is now known as the process building located on the south side of Schoolhouse Road (14 Schoolhouse Road). During the investigation, a preliminary soil investigation was performed and general geologic information was gathered. There was no contamination reported in the soil investigation.

In November 1988, the United States Environmental Protection Agency (USEPA) contracted PRC Environmental to perform a Compliance Evaluation Inspection at the facility. The site inspection incorporated both properties north and south of Schoolhouse Road. Three operations in particular were observed including the neutralization unit, the solvent recovery process, and the container accumulation area (or waste storage area). It was determined that MSC, the property owner at the time, generated hazardous waste from degreasing, recovery, washing, cleaning, plating, and etching operations. The following list of hazardous chemicals was noted to be used at the site: freon, 1,1,1-trichloroethane, isopropyl alcohol, acetone, methanol, gallium arsenide, gold, chromium, nickel, and various acids in a waste stream. The spent solvents were accumulated in 55 gallon drums prior to being disposed of by Pride Solvent and Chemical or Marisol. The gallium arsenide was disposed of by Chemical Waste Management. Gold plating waste was disposed of by Vanguard. Finally, the acid waste stream was neutralized onsite. The inspection findings concluded four concerns regarding the facility's container management. The four findings were 1) MSC had accumulated containers of hazardous waste for longer than 90 days: 2) MSC did not close three containers when not adding or removing hazardous waste: 3) MSC did not date one container, 4) MSC does not inspect the container accumulation area at least daily.

MSC had reported a spill of J-100 Stripper, a proprietary solvent, in the former hazardous waste

storage area in 1983. The spilled material drained to the north-northeast, off the asphalt pad, onto the soil. MSC excavated soil from this area, after the spill, in 1983.

In 1989, a potential sale of the property and business triggered an evaluation under the Environmental Cleanup Responsibility Act (ECRA). In February 1989, Enviro Sciences, Inc. was contracted by MSC to collect post excavation samples from the area of the 1983 J-100 Stripper spill. MSC performed this investigation to document the effectiveness of the clean-up so the property could be sold. The sampling results were submitted as part of ECRA case 88B-51. The samples indicated the presence of 1,1,1-trichloroethane in the soil. The results were compared to the ECRA guideline levels for volatile organic compounds (VOCs) and found to be below these limits.

A Negative Declaration Affidavit submitted by MSC and was approved by NJDEP on March 27, 1989. (Attachment E)

### **25 Schoolhouse Road, Block 517.02, Lot 20.01**

In July 1989, the business and partial property transfer of MSC triggered ECRA Case No. E89560 for the northern portion of the subject site. The north property included the north building, the pole barn, the former and existing waste storage areas, and the office trailer.

The Department executed an Administrative Consent Order (ACO) with Siemens in October 1989 requiring sampling to determine if contamination still existed at the site. Sample results reported to the Department in a March 12, 1991 indicated no soil contamination, however ground water contamination did exist in the three monitor wells that were sampled.

Several areas of concern on this portion of the site were subject to further investigation including a chemical waste storage area where impacted soil was removed and a Classification Exception Area was established for 1,1-dichloroethene and 1,1,1-trichloroethane.

SGS-Thomson Micro Electronics, Inc. (SGS) purchased MSC from Siemens on October 10, 1989. The transaction transferred the real estate on the northern side of Schoolhouse Road (25 Schoolhouse Road) and the businesses on both sides of the road to SGS. Siemens maintained ownership of the real estate on the southern side of Schoolhouse Road (14 Schoolhouse Road). SGS leased this portion of the property from Siemens.

SGS's operations included degreasing, washing, cleaning, plating and etching. MSC used chemicals such as freon, 1,1,1-trichloroethane, isopropyl alcohol, acetone, methanol, gallium arsenide, gold, chromium, nickel, and several types of acids. The company neutralized the acid waste onsite. The remainder of the waste generated was transported and disposed of by licensed waste haulers. (Attachment B)

In November 25, 1991 an Administrative Consent Order Affidavit was submitted by SGS-Thomson Micro Electronics, Inc. due to a sale of capital assets and business rights to the manufacturer. The ownership of real estate remained unchanged.

SGS terminated their lease with Siemens on December 13, 1990. This triggered ECRA case number 90617. A Negative Declaration Letter was issued March 20, 1991 (Attachment H)

In May 28, 1993 SGS ceased all manufacturing operations at the site.

On January 6, 1994 SGS submitted a NJDEP, ISRA Negative Declaration Affidavit along with a General Information Submission (GIS) and a Site Evaluation Submission (SES) to the Department for cessation of operations.

On January 14, 1994 the Department issued a Negative Declaration approval letter. The No Further Action approval applied to the time frame from October 10, 1989 to the date of the Negative Declaration (January 14, 1994). (Attachment J)

Several areas of concern on the northern portion of the Siemen's facility (Block 517.02, Lot 20.01; 25 Schoolhouse Road) were subject to further investigation including a chemical waste storage area where soil was removed. A sale of capital assets and business rights for manufacturing of SGS-Thomson Micro Electronics, Inc. at the 25 Schoolhouse Road location (with no change in ownership), triggered ECRA (Case No.91759). A Letter of No Further Action (NFA) was issued by the Department on September 12, 1996 for operations of SGS starting from October 10, 1989. A Classification Exception Area (CEA) was established for 1,1-dichloroethene (1,1-DCE) and 1,1,1-trichloroethane (1,1,1-TCA) due to levels of contaminants remaining at the site above NJDEPGround Water Quality Criteria (GWQC) (22 ppb and 35 ppb respectively.) A Well Restriction Area was also established coincident with the CEA. (Attachments C, F, N)

The facility on site was vacant from the cessation of operations until 1998.

Triple Net Investments V LP purchased 25 Schoolhouse Road from SGS in 1997. On or about January 1, 1998, Lucent Technologies Specialty Fiber (Lucent) leased and began operations at the site. Lucent manufactured optical fiber for telecommunications applications at the facility.

Waste streams from the various operations consisted of waste scrubber water with a pH ranging from 5 to 9, water with low concentrations of metals (lead, zinc and chromium) and waste acids and rinse water totaling approximately 60 gallons per day. (Attachment D).

During SGS's operations at 25 Schoolhouse Road up to cessation of operations in 1993, acid waste was pre-treated in an on-site acid neutralization vault and then discharged to the Middlesex County Utility Authority (MCUA). This acid neutralization vault was removed in 1997. When operations resumed in 1998, a lime chip tank was installed in the boiler room of the facility to pre-treat any acidity in the wastewater stream. All industrial and sanitary waste was and continues to be discharged to the MCUA. The lab/industrial waste discharge stream, excluding sanitary waste from restrooms, is estimated at less than 60 gallons per day. No MCUA permit is required for the facility.

On October 3, 2001 Luncent Technologies, Inc (Lucent) executed a Remediation Agreement with



the NJDEP. The purpose of the remediation was to allow Lucent to remediate the site while allowing the ISRA subject transfer of the property to OFS Lycom, Inc. (OFS). (Attachment G)

In 2001 Lucent was sold to OFS Fitel, L.L.C. Specialty Fiber. OFS Fitel continues to manufacture optical fiber for telecommunications applications (NJD044655140).

On February 13, 2002 Lucent submitted a Preliminary Assessment Report (PAR) dated February 12, 2002 for the subject site and 19 Schoolhouse Road not a subject of this report. (Attachment D)

Various AOCs were identified at 25 Schoolhouse Road are described below:

**Four above ground storage tanks (AGSTs) and associated piping.**

The on-site emergency generator, located on the east side of the building, had a self-contained, double steel-walled 250 gallon diesel tank. The tank and generator was mounted on a concrete pad that showed no evidence of any leaks from the tank.

Three AGSTs were located on the east side of the property, north of the main building. These tanks contained hydrogen, nitrogen and oxygen and were connected to the main building by underground piping.

According to the Lucent PAR, the abovementioned diesel AST and three compressed gas AGSTs did not pose any threat to the environment. Therefore, a NFA determination was proposed.

**Piping, Above Ground and Below Ground Pumping Stations, Sumps and Pits Narrative.**

According to the Lucent PAR, there was a sewerage pumping station with a vault located on the southeast side of the on-site building. There was no sign of breaches in the vault, which had been replaced within the last four years.

There was also an acidic waste water lift tank and neutralization vault located near the sewerage pumping station (southeast side of the on-site building). According to Lucent, this AOC was properly closed prior to 1998 and appeared to be in good condition and free of structural cracks at the time of their removal.

A lime chip tank, built in 1998, was located in the floor of the machine shop room. The lime chip tank consisted of a polyethylene tank and PVC piping situated inside of a six-foot by six-foot by six and a half-foot deep concrete vault. The concrete vault had a chemical-resistant liner. There were no signs of staining or evidence of any vault breaches observed.

According to the Lucent PAR, there were no known discharges, incidents or breaches at the sewerage pumping station. Likewise, there were no breaches at the lime chip tank vault. Also, the acidic waste water lift tank and neutralization vault were found to be structurally sound and no analytes exceeded NJDEP Residential Direct Contact Soil Cleanup Criteria in post excavation samples. A No Further Action (NFA) determination was proposed for these AOCs.

## **Dumpsters**

Two dumpsters were at the subject property. One was used for municipal waste and other was used for recyclable cardboard. There were no signs of stains or leaks on the asphalt surface under the dumpsters. A No Further Action (NFA) determination was proposed for this AOC.

## **Chemical Storage Cabinets or Closets**

There were no signs of spills or stains on the floor on the inside or outside of the chemical storage room. A No Further Action (NFA) determination was proposed for this AOC.

## **Electrical Transformer and Capacitors**

The facility had one pad mounted electrical transformer with no markings to indicate its PCB content or age. The transformer was located between the sewerage pumping station and cooling units. The unit had no evidence of any leakage and appeared to be in good condition. Therefore, a NFA determination was proposed for this AOC.

## **Loading and Unloading Area**

There was a loading/unloading area located on the north side of the building. The area below the loading dock was paved with asphalt. There were no storm sewer catch basins in the vicinity of the loading area. There was no evidence of surface staining on or below the loading dock, and no reports of any discharges at the area since Lucent began its occupancy of the facility. Therefore, a NFA determination was proposed for this AOC.

On April 22, 2002 a No Further Action for the entire site was issued based on the February 12, 2002 Preliminary Assessment Report.

## **14 Schoolhouse Road, Block 514, Lot 20.01**

On December 9, 1991 SGS-Thomson Microelectronics Inc. submitted an application for an Administrative Consent Order (ACO) to the Department. The ACO was submitted due to an intended sale of capital assets and business rights from SGS to Microwave Power Devices, Inc. (MPD).

A No Further Action was issued by NJDEP on September 12, 1996 with the establishment of a Classification Exception Area (CEA) due to levels of contaminants (1,1,1-TCA and 1,1-DCE) remaining at the site above Ground Water Quality Criteria (GWQC).

On April 10, 2007 the NJDEP executed a Remediation Agreement with Cardinal Health 406, LLC due to the impending sale of assets to Phoenix Charter LLC. (Attachment K)

A Preliminary Assessment (PA) Report and Site Investigation (SI) Report dated August 1, 2007 was submitted by Cardinal Health 406, LLC on August 16, 2007.

The PA identified 10 areas of concern (AOCs). Of the 10 AOCs, one (a suspected 1,000 gallon hazardous underground storage tank) required further investigation during the SI stage. The SI indicated that a 1,000 gallon single walled UST (AOC 2B) was reportedly installed along Schoolhouse Road in 1976 and removed on August 7, 1987. Consultants for Cardinal Health 406, LLC conducted field activities (i.e. soil borings, field screening, etc.) in an effort to locate the suspected UST (AOC 2B). Based on their findings, the consultants concluded that it was likely that no UST was installed at that area of the site and recommended no further action be taken. (Attachment L)

A NJDEP, Industrial Site Recovery Act (ISRA) Negative Declaration Affidavit for Cardinal Health 406, LLC, at 14 Schoolhouse Road was submitted on June 26, 2008 by Phoenix Charter LLC due to a sale of property and business.

On September 9, 2008 a NJDEP No Further Action for the entire site (14 Schoolhouse Road) for unrestricted use (NFA-E) and Covenant Not to Sue was issued to Capital Health 406, LLC. The NFA-E was based on the PA and SI reports submitted by Cardinal Health 406, LLC. (Attachment M)

Currently the property at 14 Schoolhouse road serves as the corporate headquarters for Catalent Pharma Solutions. This location also houses Catalent's laboratory and clinical and commercial manufacturing plant for oral dose forms.

Catalent Pharma Solutions (Catalent) was created in April 2007 when The Blackstone Group, a financial advisory firm, acquired the Pharmaceutical Technologies and Services segment of Cardinal Health.

Catalent currently operates a product development facility at this location (RCRA Hazardous Waste generator #NJR000032011). The operation is characterized as clinical manufacturing (where clinical and small batches of medicines are made). These medicines are usually in soft gel and tablet form. When a product is ready for full manufacturing, it is performed at the St. Petersburg, Florida facility. Product development operations include a pilot plant operation, as well as several formulation labs and analytical labs. Catalent also operates a QA/QC and R&D laboratory onsite as well.

Catalent's main hazardous waste stream is from the numerous High-Performance Liquid Chromatography (HPLC) machines that they operate onsite, inside of their formulation and analytical labs. They also generate a variety of waste alcohols and solvents onsite (both listed and characteristic - i.e. D001, F003, F005) with the occasional corrosive (acid and base) wastes.

## **CURRENT HAZARD ASSESSMENT**

The SGS Thomson Micro Electronics (SGS) site is a 48 acre site located at 14 and 25 Schoolhouse Road in Somerset, Somerset County, New Jersey.

A NJDEP, Industrial Site Recovery Act (ISRA) Negative Declaration Affidavit for Cardinal Health 406, LLC, at 14 Schoolhouse Road was submitted on June 26, 2008 by Phoenix Charter LLC due to a sale of property and business.

On September 9, 2008 a NJDEP No Further Action for the entire site (14 and 25 Schoolhouse Road) for unrestricted use (NFA-E) and Covenant Not to Sue was issued to Capital Health 406, LLC. The NFA-E was based on the PA and SI reports submitted by Cardinal Health 406, LLC. The terms of the Remediation Agreement that was entered into with the NJDEP on April 10, 2007 was satisfied and terminated. (Attachment K and M)

In September 1996 a CEA was established for 1,1-DCE and 1,1,1-TCA due to levels of contaminants remaining at the site (14 and 25 Schoolhouse Road) above GWQC (22 ppb for 1,1-DCE and 35 ppb for 1,1,1-TCA). This CEA requires that the ground water at the site be sampled biennially with the results submitted to the NJDEP. (Attachment C)

## **SOURCES**

### **Ground Water Migration Pathway**

The Brunswick Formation lies beneath the site and contains the aquifer of concern. The Brunswick Formation is approximately 6,000 to 8,000 feet thick. The formation is encountered between 4.5 and 10 feet below the ground surface. The Brunswick Formation is made up of Triassic age red shales and siltstones. The portion directly beneath the site is heavily weathered shale. Water is encountered at a depth near 18 feet. The hydraulic conductivity of the shale is  $2 \times 10^{-5}$  cm/sec. The ground water flows to the northwest.

### **Targets Associated with the Ground Water Migration Pathway**

In September 1996, after on-site monitor wells revealed volatile organic compound (VOC) contamination, a CEA was established for 1,1-DCE and 1,1,1-TCA due to levels of contaminants remaining at the site above GWQC (22 ppb and 35 ppb respectively).

The closest well to the site is 2.81 miles to northwest. The total population served with 4 miles of the site is 3,340.

### **Surface Water Pathway**

The general topography of the site is flat. Randolph Brook is closet surface water body with a straight line distance of 2,150 feet to the northwest of the site. The USGS



topographic map of the site area indicates the ground surface gently sloping towards Randolph Brook. There is evidence that suggests at one time SGS held a permit to discharge to Randolph Brook. Randolph Brook flows north into the Delaware and Raritan Canal. The canal mimics the Raritan River which lies just west of the canal. The Raritan River flows easterly towards Raritan Bay which discharges to the ocean. (Map 1)

#### **Targets Associated with the Surface Water Migration Pathway**

There are two surface water intakes, downstream of the site, that provides drinking water. The closest intake is operated by Middlesex Water Company at approximately 9 miles downstream. This intake on the Delaware and Raritan Canal and Millstone River at Route 18. The second intake is operated by New Brunswick Water Department at George Street and College Avenue on the Delaware and Raritan Canal, approximately 12 miles downstream.

Soil at site has been remediated; therefore, no potential for surface water to become contaminated exists. Surface water targets will not be evaluated.

#### **Soil Exposure Pathway**

The soils at the site are formed from the underlying Passaic Formation. The formation is predominantly grayish-red to reddish-brown, evenly to irregularly bedded, thin-to thick-bedded shale, siltstone, very fine to coarse-grained sandstone and red matrix conglomerate. The soil types are silts with silty clays in the topographic depressions. According to the Engineering Soil Survey of Somerset County, the soil type has been classified as the Penn and Croton Correlated Agronomic Series.

#### **Targets Associated with the Soil Exposure Pathway**

Since no surface soil contamination remains on site, a soil exposure pathway does not exist and will not be evaluated.

#### **Air Migration Pathway**

A release to the air migration pathway was neither observed nor suspected.

#### **Targets Associated with the Air Migration Pathway**

Air migration pathway targets will not be evaluated.

## **CONCLUSIONS**

Subsequent to soil cleanup at the site, a CEA was established for the site in September 1996 for 1,1-DCE and 1,1,1-TCA due to levels of contaminants remaining at the site above GWQC (22 ppb for 1,1-DCE and 35 ppb for 1,1,1-TCA). This CEA requires that the ground water at the site be sampled biennially with the results submitted to the NJDEP.

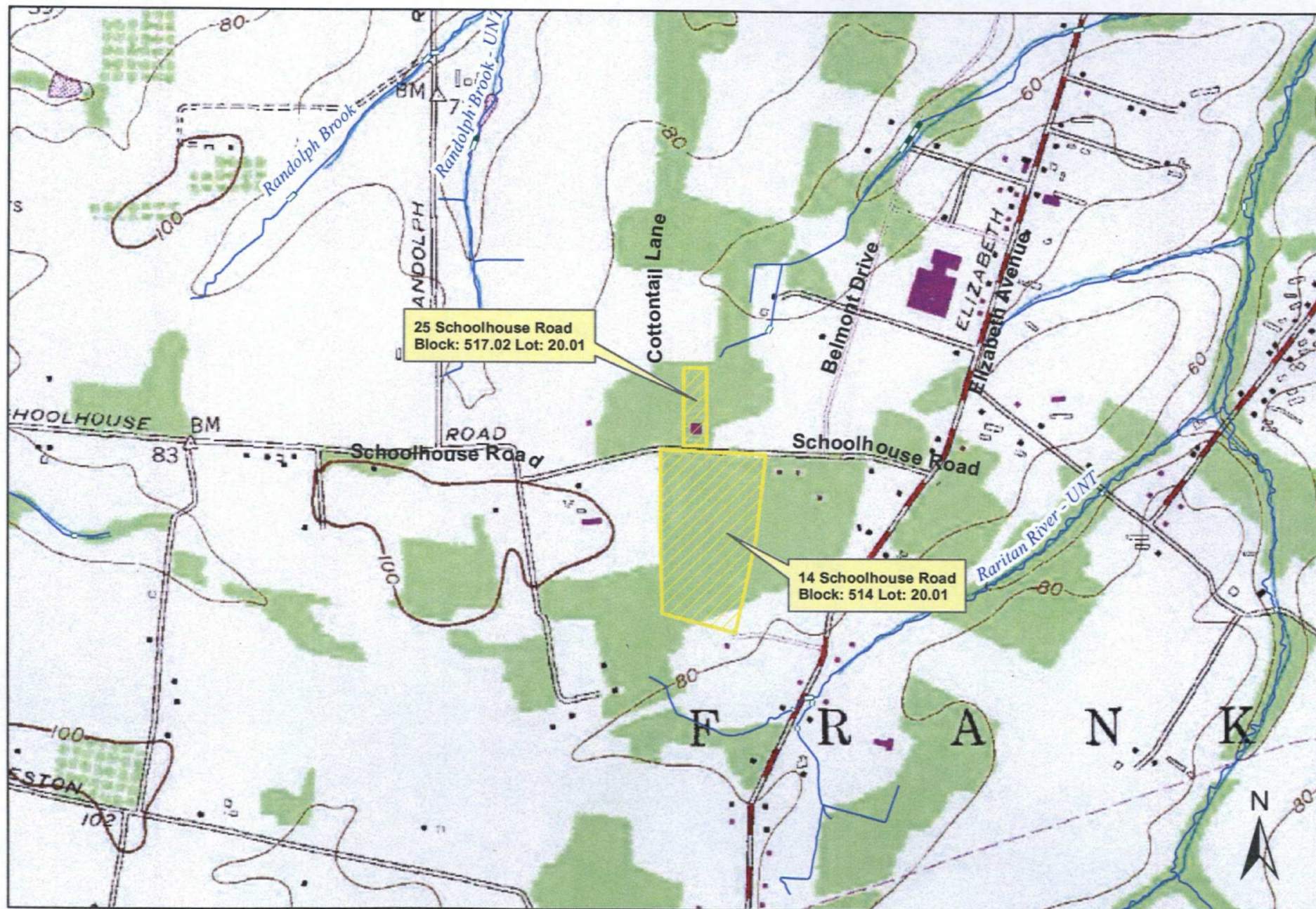
The NJDEP, Bureau of Operations Maintenance and Monitoring should monitor/review biennial monitoring results which are submitted the site.

Due to a HRS Score of less than 28.5, the site warrants a No Further Remedial Action Planned designation under CERCLA.

MAPS



SGS Thomson Micro Electronics  
14 and 25 Schoolhouse Road  
Franklin Township, Somerset County, New Jersey



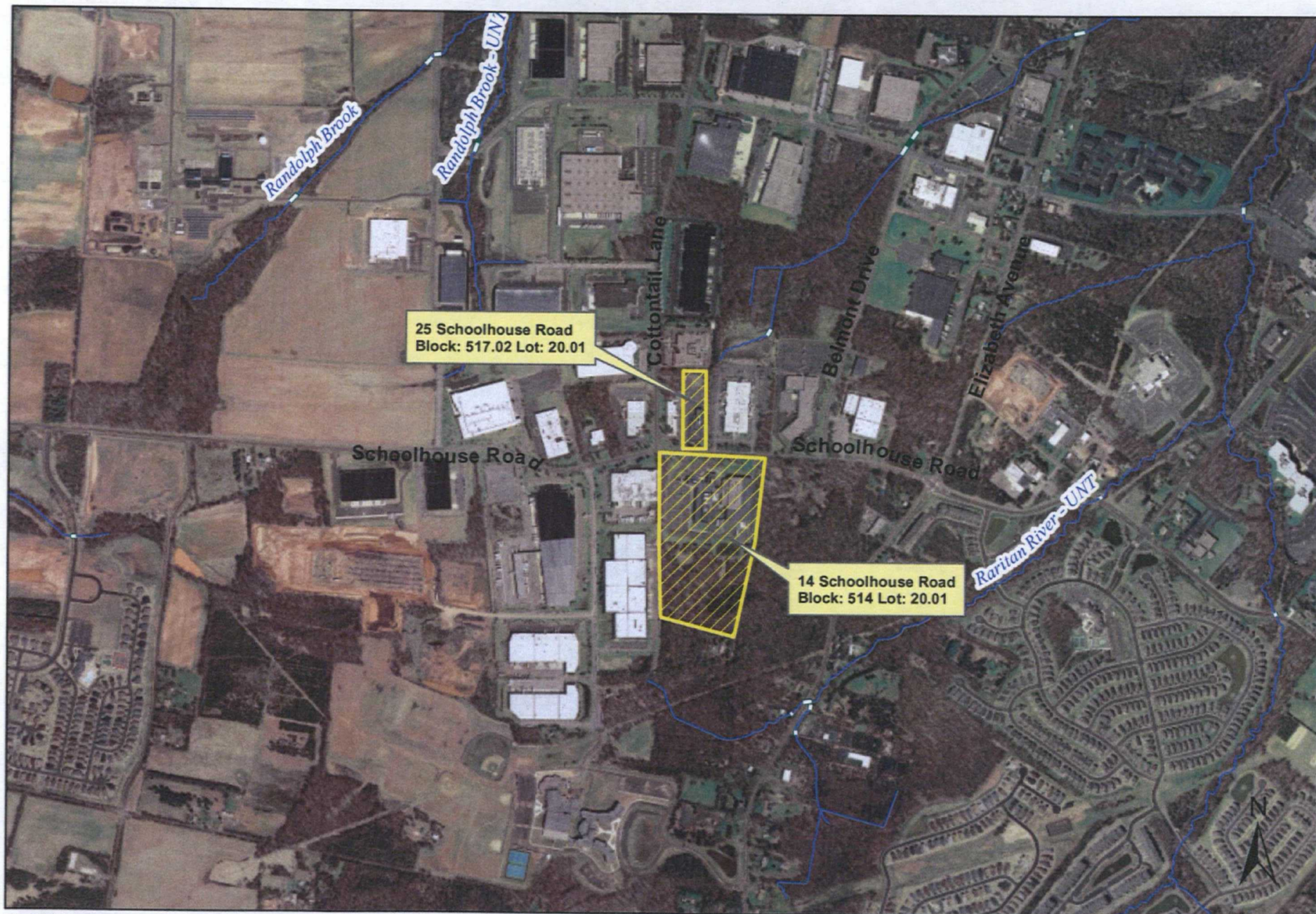
U.S. Geological Survey Color Topoquad (Bound Brook 1973)

Map 1

0 1,050 2,100 4,200 Feet



SGS Thomson Micro Electronics Site Map  
14 and 25 Schoolhouse Road  
Franklin Township, Somerset County, New Jersey



25 Schoolhouse Road  
Block: 517.02 Lot: 20.01

14 Schoolhouse Road  
Block: 514 Lot: 20.01

2007 Aerial Imagery

NJDEP/BEMSA September 2010

Map 2

0 1,050 2,100 4,200 Feet

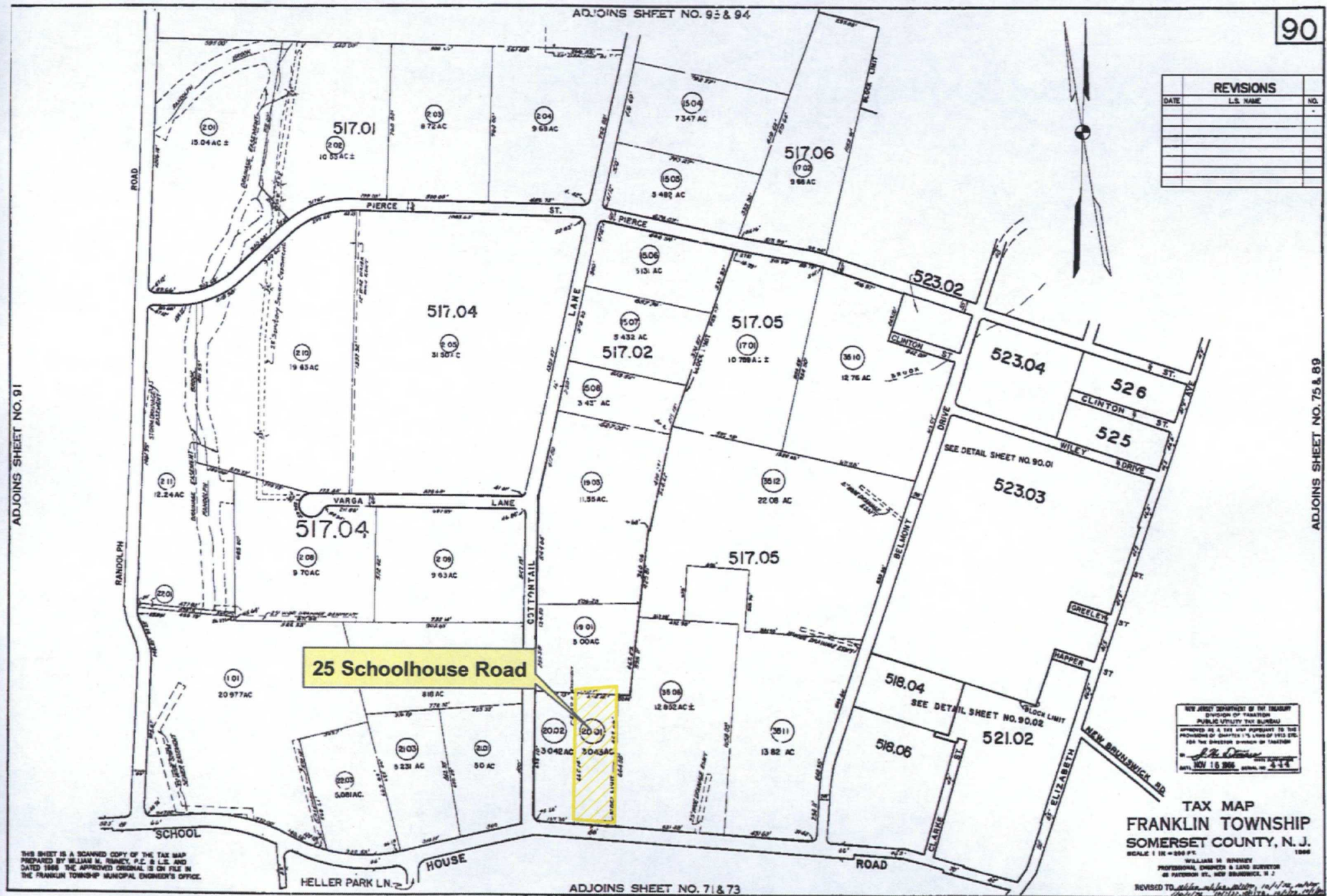


## 14 Schoolhouse Road





REVISIONS		
DATE	L.S. NAME	NO.



ADJOINS SHEET NO. 91

ADJOINS SHEET NO. 75 & 89

THIS SHEET IS A SCANNED COPY OF THE TAX MAP PREPARED BY WILLIAM M. RIMNEY, P.E. & L.S. AND DATED 1988. THE APPROVED ORIGINAL IS ON FILE IN THE FRANKLIN TOWNSHIP MUNICIPAL ENGINEER'S OFFICE.

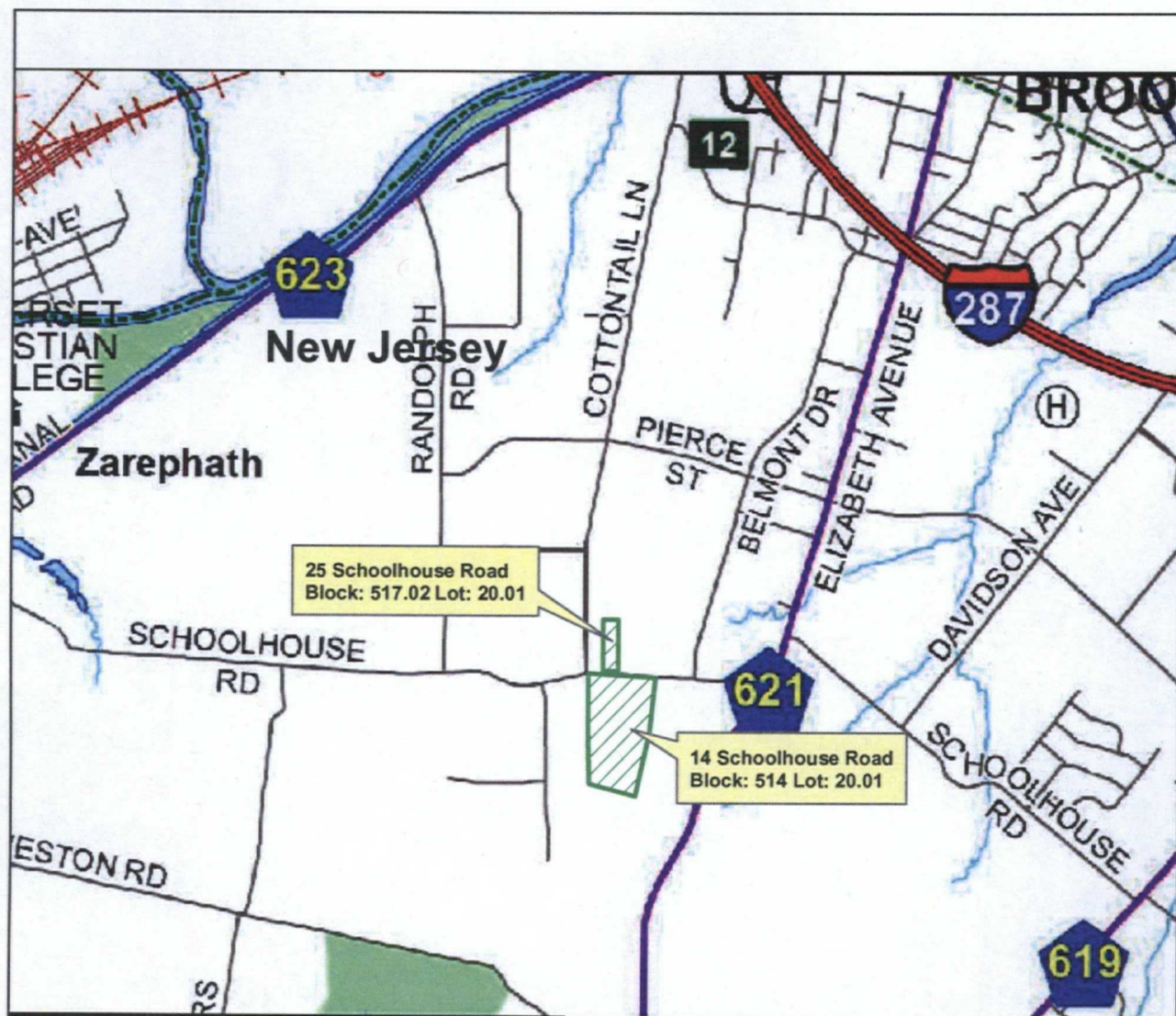
NEW JERSEY DEPARTMENT OF THE TREASURY  
DIVISION OF TAXATION  
PUBLIC UTILITY TAX BUREAU  
APPROVED AS A TAX MAP PURSUANT TO THE PROVISIONS OF CHAPTER 174, LAWS OF 1982, ETC. FOR THE JUNE 1988 DIVISION OF TAXATION  
DATE: NOV 18 1988. SERIAL NO. 3-14

**TAX MAP**  
**FRANKLIN TOWNSHIP**  
**SOMERSET COUNTY, N. J.**  
SCALE 1 IN. = 500 FT. 1988

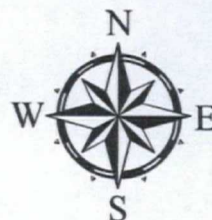
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PROFESSIONAL ENGINEER & LAND SURVEYOR  
400 PATERSON ST., NEW BRUNSWICK, N. J.  
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SGS Thomson Micro Electronics  
14 and 25 Schoolhouse Road  
Franklin Township, Somerset County, New Jersey



0 1,100 2,200 4,400 Feet



Source: <http://www.state.nj.us/transportation/gis/maps/somerset.pdf>

Map 4

**SOMERSET  
COUNTY**



**STATE OF  
NEW JERSEY**

Governor Chris Christie  
Lt. Governor Kim Guadagno

APPROVED BY THE  
NEW JERSEY DEPARTMENT OF  
TRANSPORTATION  
Commissioner James S. Simpson

DIVISION OF INFORMATION TECHNOLOGY  
BUREAU OF INFORMATION MANAGEMENT  
AND TECHNOLOGY PLANNING  
GEOGRAPHIC INFORMATION SYSTEMS

IN COOPERATION WITH  
U.S. DEPARTMENT OF TRANSPORTATION





100,000 GPD WATER WITHDRAWAL  
POINTS WITHIN 5 MILES OF :  
X : 479458.63  
Y : 617540.86

SCALE : 1 : 63,360

PLOT PRODUCED BY :  
NJDEP  
WATER SUPPLY  
BUREAU OF WATER ALLOCATION  
P.O. Box 426  
TRENTON, NJ 08625  
DATE : 8/26/2010

SUBJECT TO REVISION



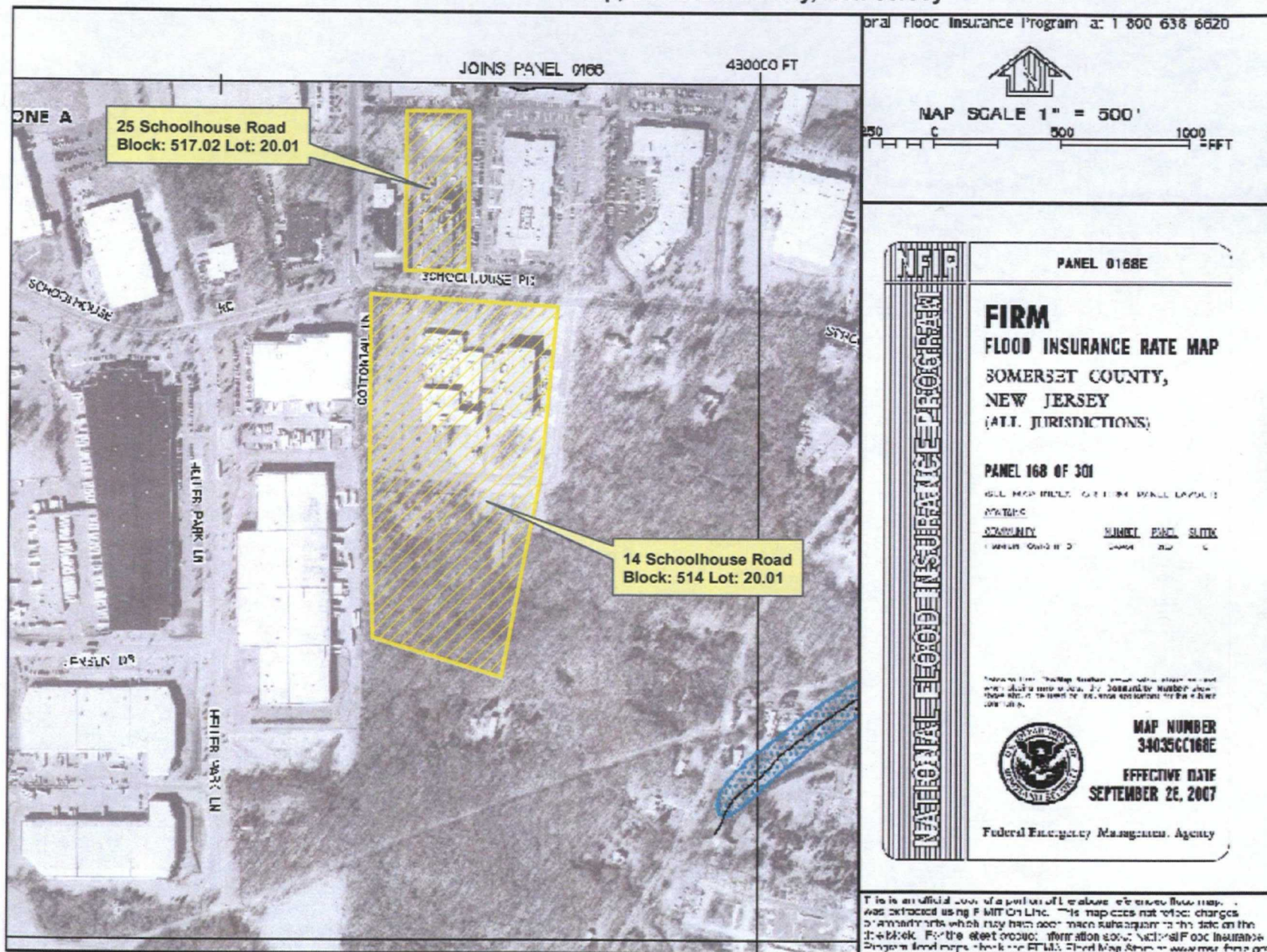
MAP 5

Sequence Number	PI ID Number (Preferred NJEMS ID)	PI Name	SI Description	Distance from N/Y Origin (mi.)	Dep to Top of Open Interval + Units	Dep To Btm of Open Interval + Units	Z (Elevation)	Geologic Unit	Hydrogeologic Unit	Rated Pump Capacity + Units Code	BRDGBWASUBJITEMID (BWA)
13	5020X	NJ AMERICAN WATER - RARITAN SYSTEM	M S INTAKE	1.54							5110
10	5020X	NJ AMERICAN WATER - RARITAN SYSTEM	INTAKE 2	1.56							5107
9	5020X	NJ AMERICAN WATER - RARITAN SYSTEM	INTAKE 1	1.56							5106
14	5020X	NJ AMERICAN WATER - RARITAN SYSTEM	CANAL INTAKE	1.60							5111
12	5020X	NJ AMERICAN WATER - RARITAN SYSTEM	INTAKE 4	1.70							5109
11	5020X	NJ AMERICAN WATER - RARITAN SYSTEM	INTAKE 3	1.73							5108
28	5020X	NJ AMERICAN WATER - RARITAN SYSTEM	WELL 12	2.64				4000 JTrp Passaic Formation	ba Brunswick aquifer	175gm	9011
26	5020X	NJ AMERICAN WATER - RARITAN SYSTEM	WELL 9	2.76	18ft	22ft		4000 JTrp Passaic Formation	ba Brunswick aquifer	350gm	8952
27	5020X	NJ AMERICAN WATER - RARITAN SYSTEM	WELL C-2	2.81	32ft	280ft	22	4000 JTrp Passaic Formation	ba Brunswick aquifer	150gm	8953
25	5020X	NJ AMERICAN WATER - RARITAN SYSTEM	WELL C-1	2.90	47ft	340ft	22	4000 JTrp Passaic Formation	ba Brunswick aquifer	200gm	8951
54	5020X	NJ AMERICAN WATER - RARITAN SYSTEM	WELL 2	3.43	64ft	403ft	55	3070 Trb Brunswick Formation (superceded by Passaic, Feltville, Towaco, and Boonton Formations)	ba Brunswick aquifer	350gm	14242
53	5020X	NJ AMERICAN WATER - RARITAN SYSTEM	WELL 1	3.46	66ft	386ft	56	3070 Trb Brunswick Formation (superceded by Passaic, Feltville, Towaco, and Boonton Formations)	ba Brunswick aquifer	375gm	14241
36	5020X	NJ AMERICAN WATER - RARITAN SYSTEM	WELL 3	3.47	64ft	352ft	59	3070 Trb Brunswick Formation (superceded by Passaic, Feltville, Towaco, and Boonton Formations)	ba Brunswick aquifer	375gm	11118

8/27/2010



SGS Thomson Micro Electronics  
14 and 25 Schoolhouse Road  
Franklin Township, Somerset County, New Jersey



**ATTACHMENT A**



## Superfund

<http://cfpub.epa.gov/supercpad/cursites/csitinfo.cfm?id=0203618>  
Last updated on Wednesday, September 29, 2010

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## Search Superfund Site Information

### SGS THOMSON MICRO ELECTRONICS

#### Site Information

[Site Info](#) | [Aliases](#) | [Operable Units](#) | [Contacts](#)  
[Actions](#) | [Contaminants](#) | [Site-Specific Documents](#)

**Site Name:** SGS THOMSON MICRO ELECTRONICS

**Street:** 100 SCHOOLHOUSE RD

**City / State / ZIP:** SOMERSET, NJ 08873

**NPL Status:** Not on the NPL

**Non-NPL Status:** Site Reassessment Ongoing

**ERS Exclusion:** An Eligible Response Site (ERS) Exclusion decision has been made at this site.

**EPA ID:** NJD044655140

**EPA Region:** 02

**County:** SOMERSET

**Federal Facility Flag:** Not a Federal Facility

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A



## Superfund

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### SGS THOMSON MICRO ELECTRONICS

#### Aliases

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[Actions](#) | [Contaminants](#) | [Site-Specific Documents](#)

**Alias Name / Street / City / State / ZIP**

NCS SPECIALTY FIBER  
NJ

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### SGS THOMSON MICRO ELECTRONICS

#### Actions

[Site Info](#) | [Aliases](#) | [Operable Units](#) | [Contacts](#)  
[Actions](#) | [Contaminants](#) | [Site-Specific Documents](#)

<u>OU</u>	<u>Action Name</u>	<u>Qualifier</u>	<u>Lead</u>	<u>Actual Start</u>	<u>Actual Completion</u>
00	DISCOVERY		F		01/29/1992
00	PRELIMINARY ASSESSMENT	D	F	06/26/1992	09/28/1992

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URL: <http://cfpub.epa.gov/supercpad/cursites/cactinfo.cfm>  
This page design was last updated on Tuesday, January 20, 2009  
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**ATTACHMENT B**



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 2  
290 BROADWAY  
NEW YORK, NY 10007-1866

August 13, 2009

Mr. Frank Sorce  
Bureau of Environmental Measurements and Site Assessment  
Division of Remediation Support  
State of New Jersey Department of Environmental Protection  
PO Box 407  
Trenton, New Jersey 08625-0407

Dear Mr. Sorce:

Enclosed is a complete copy of the SGS Thompson Preliminary Assessment (PA) report you requested. Please feel free to contact me if you have any questions at (212) 637-4342.

Sincerely

  
James Desir

Pre-Remedial Section

B

EPA WORK ASSIGNMENT NO: 041-2Z00  
EPA CONTRACT NO.: 68-W8-0110  
EBASCO SERVICES INCORPORATED

ARCS II PROGRAM

FINAL DRAFT  
ENVIRONMENTAL PRIORITIES INITIATIVE/  
PRELIMINARY ASSESSMENT (EPI-PA)  
SGS THOMSON MICRO ELECTRONICS  
CITY OF SOMERSET  
SOMERSET COUNTY, NEW JERSEY  
CERCLIS NO.: NJD044655140

SEPTEMBER 1992

NOTICE

THE INFORMATION IN THIS DOCUMENT HAS BEEN FUNDED BY THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY (USEPA) UNDER ARCS II CONTRACT NO. 68-W8-0110 TO EBASCO SERVICES INCORPORATED (EBASCO). THIS DOCUMENT HAS BEEN FORMALLY RELEASED BY EBASCO TO THE USEPA. THIS DOCUMENT DOES NOT, HOWEVER, REPRESENT USEPA POSITION OR POLICY, AND HAS NOT BEEN FORMALLY RELEASED

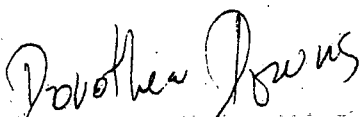
EPA WORK ASSIGNMENT NO.: 041-2Z00  
EPA CONTRACT NO.: 68-W8-0110  
EBASCO SERVICES INCORPORATED

ARCS II PROGRAM

FINAL DRAFT  
ENVIRONMENTAL PRIORITIES INITIATIVE/  
PRELIMINARY ASSESSMENT (EPI-PA)  
SGS THOMSON MICRO ELECTRONICS  
CITY OF SOMERSET  
SOMERSET COUNTY, NEW JERSEY  
CERCLIS NO.: NJD044655140

SEPTEMBER 1992

PREPARED BY:



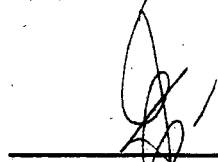
Dorothea Downs  
Task Leader  
Ebasco Services Incorporated

APPROVED BY:



Ming Kuo, PhD, PE  
ARCS II Technical Support Manager  
Ebasco Services Incorporated

REVIEWED BY:



Edgar J. Aguado  
EPA-PA Site Manager  
Ebasco Services Incorporated

## **SITE SUMMARY AND RECOMMENDATION**

The SGS Thomson Micro Electronics (SGS) site is a 48 acre site located at 14 and 25 Schoolhouse Road in Somerset, Somerset County, New Jersey (Figure 1). The site is identified by the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) Number NJD044655140. The 14 Schoolhouse Road address is abandoned at this time. The 25 Schoolhouse Road address currently manufactures electronic components for amplifiers. The facility is located in an industrial park which the city zones M-1 for light manufacturing. The site is not enclosed in a fenced area. A fence did exist around the former waste storage area but has since been taken down. A fence currently surrounds the existing waste storage area located behind the north building adjacent to the pole barn. The contents of the existing waste storage area have been moved to the former plating room in the north building in preparation for moving the facility to Long Island, New York. The SGS assets were sold to Microwave Power Devices (MPD), headquartered in New York, in May 1992. The site encompasses the north building, the south building, the pole barn, the process building, the neutralization system, the waste storage area, and the office trailer (Figure 2).

Prior to SGS purchasing the property in 1989, Microwave Semiconductor Corporation (MSC) manufactured electronic components at the facility. The land was vacant prior to MSC's occupation. During MSC's ownership, the address of the facility was 100 Schoolhouse Road. This address combined buildings both north and south of Schoolhouse Road. SGS purchased the property north of Schoolhouse Road and leased the property south of Schoolhouse Road. The property addresses were changed during the ownership transaction. The property north of Schoolhouse Road is now addressed 25 Schoolhouse Road. The north property includes the north building, the pole barn, the former and existing waste storage areas, and the office trailer. The property south of Schoolhouse Road is now addressed 14 Schoolhouse Road. The south property includes the south building, the process building, and the neutralization system. In December 1990, SGS ended the one year lease of the south property held with Siemens MC (Siemens), which owns MSC. Siemens is currently trying to sell the south property.

MSC, the previous owner, manufactured both silicon and gallium arsenide transistors. MSC operated at the site from 1969 to 1989. The facility's operations included degreasing, washing, cleaning, plating, and etching. MSC used chemicals such as freon, trichloroethane, isopropyl alcohol, acetone, methanol, gallium arsenide, gold, chromium, nickel, and several types of acids. The company neutralized the acid waste onsite. The remainder of the waste generated was transported and disposed of by licensed waste haulers. In 1980, MSC became a division of Siemens.

Two site reconnaissances were held at the SGS site by Ebasco Services Incorporated (Ebasco). The first site visit, on August 4, 1992, incorporated the 25 Schoolhouse Road address. A tour of the facility was taken which included the north building, the pole barn, the existing and former waste storage areas, and the office trailer. The north building occupied the process lines, the vapor degreaser, and the current waste storage area. The process lines were similar to a laboratory. The chemicals used were mostly acids which were disposed of in the acid wastestream. Three drums of acid wastestream were stored in the former plating shop drum storage area, identified in this report as Solid Waste Management Unit (SWMU) 1. The storage

area was identified as a solid waste management unit. On August 12, 1992, the second site reconnaissance was performed. The site visit focused on the property south of Schoolhouse Road. This property is owned by Siemens and is currently abandoned. A tour of the south building, the process building and the neutralization system was taken. The neutralization system (SWMU 2) was still onsite. Four tanks were associated with this unit. Each tank was included as a solid waste management unit. The four tanks identified were the neutralization tank (part of SWMU 2), the equalization tank (SWMU 3), the hydrochloric (HCL) tank (SWMU 4), and the sodium hydroxide (NaOH) tank (SWMU 4). The tanks are currently filled with chemicals. Siemens is attempting to sell the HCL and NaOH which was used to neutralize the acid wastestream. Overall, the soil and vegetation surrounding both properties did not appear to be stressed during the site reconnaissance. Air monitoring, which was done at the facility, did not detect anything above background.

In July 1985, an Environmental Impact Assessment (EIA) was performed, at the site, for the proposed addition of the research and electronics facility. The investigation concluded that the new building would have very few environmentally adverse affects on the property or the community. The building was built in 1986 and is now known as the process building located on the southside of Schoolhouse Road. During the investigations, a preliminary soil investigation was performed and general geologic information was gathered. There was no contamination reported in the soil investigation.

In November 1988, the United States Environmental Protection Agency (USEPA) contracted PRC Environmental to perform a Compliance Evaluation Inspection at the facility. The site inspection incorporated both properties north and south of Schoolhouse Road. Three operations inparticularly were observed including the neutralization unit, the solvent recovery process, and the container accumulation area (or waste storage area). It was determined that MSC, the property owner at the time, generated hazardous waste from degreasing, recovery, washing, cleaning, plating, and etching operations. The following list of hazardous chemicals was noted to be used at the site: freon, trichloroethane, isopropyl alcohol, acetone, methanol, gallium arsenide, gold, chromium, nickel, and various acids in a wastestream. The spent solvents were accumulated in 55 gallon drums prior to being disposed of by Pride Solvent and Chemical or Marisol. The gallium arsenide was disposed of by Chemical Waste Management. Gold plating waste was disposed of by Vanguard. Finally, the acid wastestream was neutralized onsite. The inspection findings concluded four concerns regarding the facility's container management. The four findings were; 1) MSC had accumulated containers of hazardous waste for longer than 90 days; 2) MSC did not close three containers when not adding or removing hazardous waste; 3) MSC did not date one container; 4) MSC does not inspect the container accumulation area at least daily.

MSC had reported a spill of J-100 Stripper, a proprietary solvent, in the former hazardous waste storage area in 1983. The spilled material drained to the north and northeast, off the asphalt pad, onto the soil. MSC excavated soil from this area, after the spill, in 1983. Enviro Sciences, Inc. were contracted by MSC to collect post excavation samples in February 1989. MSC performed this investigation to document the effectiveness of the clean-up so the property could be sold. The sampling results were submitted as part of Evaluation Cleanup Responsibility Act (ECRA) case 88B-51. The samples indicated the presence of 1,1,1-trichloroethane in the soil. The results

were compared to the ECRA guideline levels for volatile organic compounds (VOCs) and found to be below these limits.

In the Fall of 1989, SGS initiated procedures to purchase the building north of Schoolhouse Road. Prior to the purchase, SGS contracted Metcalf and Eddy Technologies to perform additional investigations in the former waste storage area where the spill had occurred. The results of the investigation revealed that residual contamination remained off or near the paved area. Additional sampling was performed to determine the extent of contamination present and to determine if additional remediation was necessary. The sampling results indicated 1,1,1-trichloroethane, tetrachloroethylene, 1,1-dichloroethane and dichlorobenzene in the soil. The area was excavated further following the Metcalf and Eddy investigation. The asphalt pavement and soils excavated were hauled offsite for disposal as hazardous waste. Post excavation sampling indicated the presence of volatile organic compounds at levels slightly above the ECRA guideline. A Sampling and Clean-up Report was provided to the New Jersey Department of Environmental Protection and Energy (NJDEPE) with detailed information on the work completed and the documentation of this work which was done "at peril". The NJDEPE reviewed the document and determined that further investigation to determine the extent of the contamination would need to be done. A well survey within one-half mile of the site was also requested by the NJDEPE.

In October 1989, MSC announced the sale of the north property to SGS. The NJDEPE ECRA unit was notified of the transaction of the property and an Administrative Consent Order (ACO) was signed between MSC and the NJDEPE. The ACO required MSC to prepare a Sampling Plan to determine if any contamination still existed at the site. An ECRA Sampling Plan was prepared by Lan Associates for MSC in September 1990. The results of this investigation were compiled in the Results of ECRA Sampling Plan Implementation report dated March 12, 1991. The analytical data indicated that no contamination existed in the soil but contamination did exist in the groundwater. A total of three soil samples were collected. The soils were analyzed for priority pollutant volatile organics with a forward search of the first fifteen tentatively identified compounds (vo+15). The soil results were non-detect for the volatile organics and the tentatively identified compounds. A total of three monitoring wells were also sampled. The monitoring wells were analyzed for vo+15, Base Neutral/Acid Extractables+25, priority pollutant metals, methyl ethyl ketone, ethanol, 4-methyl-2-pentanone, cyanide, total dissolved solids and pH. The groundwater sampling results indicated VOC contamination in MW-1, MW-2 and MW-3. The results from MW-1, the background well, reported total volatile organic compounds at 10.8 ppb. This was slightly above the ECRA guideline for total organic compounds at 10.0 ppb. The major contaminants in this well were 1,1,1-trichloroethane at 3.0 ppb and trichloroethane at 6.5 ppb. The results from monitoring well MW-2 revealed a total volatile organic compounds concentration of 855 ppb. The major contaminants at MW-2 were 1,1-dichloroethene at 140 ppb and 1,1,1-trichloroethane at 680 ppb. Both of these compounds are considered to be degradation compounds to tetrachloroethene a constituent of the J-100 Stripper. Monitoring well MW-3 detected methylene chloride at 3.8 ppb, 1,1,1-trichloroethene at 3.9 ppb, and trichloroethene at 1.2 ppb. The other parameters tested for had results below the ECRA guideline levels.

A second confirmational round of groundwater sampling was completed in January 1991. The results of the sampling event were also reported in the Results of ECRA Sampling Plan



Implementation dated March 12, 1991. The results of the second round of groundwater sampling confirmed the presence of 1,1,1-trichloroethane and 1,1-dichloroethene. The concentrations were considerably lower than the first round of groundwater sampling. The background well, MW-1, had a total volatile organic compound concentration at 11.9 ppb just above the ECRA guideline of 10.0 ppb. The total volatile organic concentration at MW-2 was 244.6 ppb. The major components were 1,1-dichloroethane at 47 ppb and 1,1,1-trichloroethane at 190 ppb. Dichloroethene was detected in MW-2 at 76 ppb. The concentration of volatile organic in MW-3 increased to a total of 27.2 ppb up from 8.9 ppb in the first round of sampling. Methylene chloride, 1,1-dichloroethene, trichloroethene, 1,1-dichloroethane, and 1,1,1-trichloroethane were present in MW-3 at concentrations 1.1 ppb, 1.1 ppb, 1.5 ppb, 8.5 ppb, and 15 ppb, respectively.

In August 1991, the additional investigation of the contamination at the site was completed. The NJDEPE reviewed the results and determined that the vertical extent of the contamination was not sufficiently defined. The results of the investigation showed once again elevated levels of volatile organic compounds in the groundwater. The specific area of concern to the NJDEPE was near MW-2 where the highest levels of contamination were found.

On August 4, 1992, Siemens, owner of MSC, submitted to the NJDEPE the Results of Additional Groundwater Quality Delineation at the MSC site. During this investigation a cluster of monitoring wells in the area of MW-2 were installed to delineate the vertical contamination. The monitoring wells were sampled in May 1992 for voc+15. General water chemistry analysis was also performed on the cluster wells (MW-2, MW-2A, and MW-2B). The analytical results indicated even lower levels of contamination in the groundwater than the previous data had indicated. In MW-1 and MW-3, the levels detected were below the NJDEPE proposed clean-up levels except for trichloroethene at 5.5 ppb and 2.6 ppb, respectively. Elevated levels were reported in MW-2. The levels were above the proposed NJDEPE levels for 1,1-dichloroethene, 1,1,1-trichloroethane, trichloroethene, and 1,1,2-trichloroethane at 190 ppb, 760 ppb, 4.1 ppb, and 3.6 ppb, respectively. The intermediate monitoring well, MW-2A, at 70 feet below ground surface showed 1,1-dichloroethane at 3.0 ppb (1 ppb above the NJDEPE clean-up level). The deep monitoring well, MW-2B, reported no contamination. The MSC drinking water well was also sampled and this did not have any contamination. The final well sampled was MW-4, a downgradient well, which also did not have any contamination. As a result of the analytical data, Siemens' submitted the Results of Additional Groundwater Quality Delineation document to the NJDEPE with a negative declaration request for the site. The negative declaration was justified by indicating that the compounds detected in MW-2 are confined to the MW-2 location, and that they have not migrated offsite or vertically. Siemens agreed to sample monitoring well, MW-2, under a NJPDES discharge to groundwater permit in order to monitor the well. The NJDEPE is currently reviewing the document submitted August 4, 1992. ECRA Case #89560 has not been officially closed to date.

Another ECRA Case, ECRA #90617, was filed by SGS in February 1991 to alert the NJDEPE that the 14 Schoolhouse Road facility would not be leased for another year and that processes at the facility were to be abandoned by SGS. Several lab packs of hazardous waste and materials were disposed of during the evacuation of the south building by Advanced Environmental Technology Corporation (AETC) in December 1990. The neutralization system at this time was closed. The 1400 gallon hydrochloric (HCL) tank and the 1000 gallon sodium hydroxide

(NaOH) tank associated with the neutralization system remained at the facility. The emergency generator tank filled with 1000 gallons of diesel also remained. The NJDEPE in March 1991 approved the negative declaration along with the stipulation that the 1000 gallon diesel tank could remain on the property. No reference was made to the HCL or NaOH tanks at the property. Currently, Siemens is in the process of selling the property. The NaOH and HCL are also being sold.

The SGS facility overlies the Brunswick Formation. The Brunswick formation is composed of Triassic age red shales and siltstones. The upper portions of the shale are encountered below the site between 4.5 and 10 feet. The upper portion of the formation is a highly weathered shale. The Brunswick Formation has a thickness between 6000 and 8000 feet. Above the weathered shale is about two feet of sandy silty. A thin layer of topsoil is present at the surface. The Brunswick Formation is the shallowest of the bedrock units used as a drinking water supply for both private residential wells and the Elizabeth Town Water Company, a public utility. The monitoring wells were installed into the deeper more competent rock for drinking and monitoring purposes. The water levels in the shallow monitoring wells are between 18.6 and 28.5 feet below ground surface. The groundwater flows in a northwesterly direction beneath the site. The closest drinking water well is on the SGS property. There is a total of two wells used for drinking water at the site. The well located north of Schoolhouse Road is approximately 300 feet deep. The well south of the Schoolhouse Road is approximately 350 feet deep. The north well is closer to the contamination source area. The groundwater is contaminated at the site. The groundwater is used in the site vicinity for drinking. The total number of people drinking groundwater within four miles of the site is 13,192.

The general topography of the site area is flat. Randolph Brook is the closest surface water body with a straight line distance of 2150 feet to the northwest of the site. The USGS topographic map of the site area indicates the ground surface gently sloping towards Randolph Brook. There is evidence that suggests at one time SGS held a permit to discharge to Randolph Brook. Randolph Brook flows north into the Delaware and Raritan Canal. The canal mimics the Raritan River which lies just west of the canal. The Raritan River flows easterly towards Raritan Bay which discharges to the ocean. There are two surface water intakes, downstream of the site, that provide drinking water. The closest intake is operated by Middlesex Water Company at approximately 9 miles downstream. This intake is located on the Delaware and Raritan Canal and Millstone River at Route 18. The second intake is operated by New Brunswick Water Department, at George Street and College Avenue on the Delaware and Raritan Canal, approximately 12 miles downstream.

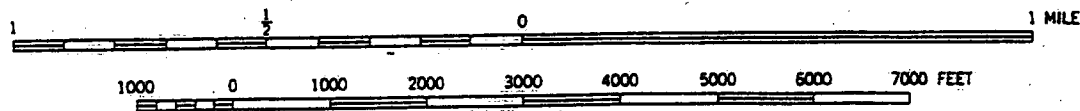
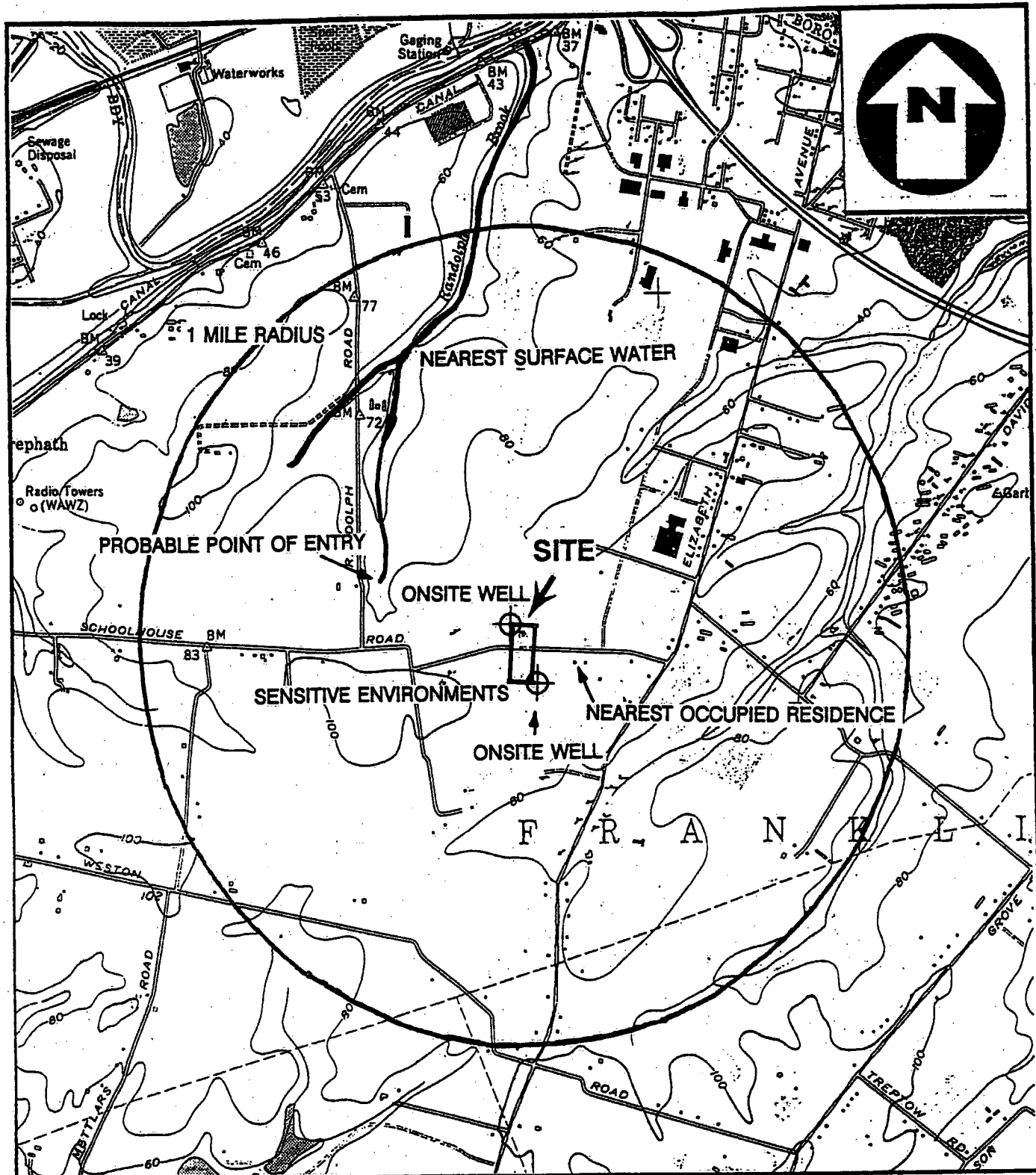
The SGS site lies beyond the 500 year flood plain. There are several sensitive environments identified within Somerset and Middlesex Counties. The counties cover over a fifteen mile radius distance from the site. The Somerset and Middlesex County Rare Species and Natural Communities' lists include vertebrates and vascular plants that are either endangered or threatened. There are 21 separate vertebrates and 55 separate vascular plants listed. Four ecosystems are also listed in Somerset County.

The nearest occupied residence is located 700 feet directly east of the south building. The total number of people working onsite and within 200 feet of the site is 36. SGS employs 35 people

at the 25 Schoolhouse Road address. One person is employed by Siemens at the 14 Schoolhouse Road address. There are no other facilities or residences within 200 feet of the site. There are no schools or daycare facilities within 200 feet of the contaminated soil. Virgin woodland occupies 27 acres at the south end of the site. Many of the terrestrial sensitive environments described in the lists provided by the New Jersey Natural Heritage Program could occupy this area. The lists do not provide exact locations of threatened or endangered species so their presence can not be documented.

The nearest residence is approximately 700 feet east of the site. The population within four miles of the site is 54,766. There are several endangered and threatened species identified in Somerset County. The exact location of these species has not been identified. However, virgin woodland occupies 27 acres at the south end of the site. The woodlands could supply suitable environments for many of the endangered and threatened species. There are no parks or recreational areas adjacent to the site property.

Documented releases of contamination to the soil and groundwater have occurred. The releases are associated with the former waste storage area. Soil has been excavated from the area several times. The last soil samples taken indicated that the appropriate amount of soil had been removed. Groundwater is still contaminated at the site. In their last report submitted to the NJDEPE Siemens indicated that the groundwater contamination was local and had not migrated laterally or vertically from the site. The NJDEPE is reviewing this document at this time. The targets affected by the contamination would be those residents that are drinking groundwater from wells less than 70 feet deep. A well survey covering a 1/2 mile distance from the site was completed. The residential wells within this radius distance are either not used for drinking water or are set in a water bearing zone much deeper than the contamination found at the site. The NJDEPE has been very active at the site. The comments of the NJDEPE on the final document Siemens submitted should be reviewed prior to making a site recommendation.

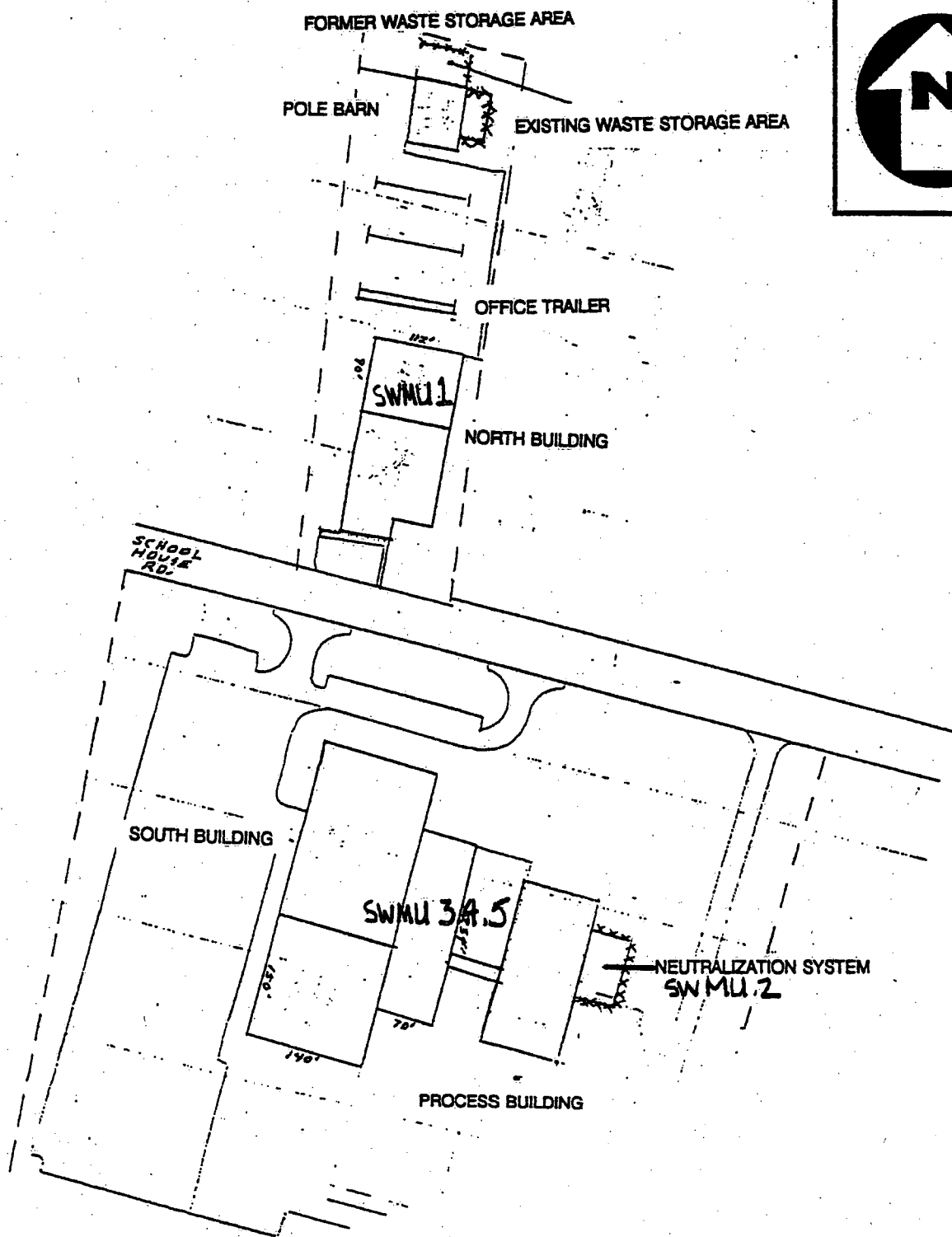


TOPOGRAPHY TAKEN FROM  
1955 BOUND BROOK, N.J.  
U.S.G.S. QUADRANGLE 7.5 MIN. SERIES  
(PHOTOREVISED 1977)

REGIONAL LOCATION MAP  
SGS THOMSON  
MICRO ELECTRONICS  
SOMERSET, NEW JERSEY

Ebasco Environmental

FIGURE 1



NOT TO SCALE

Figure taken from  
Microwave Semiconductor Corporation (MSC)  
Part A Permit Application

SITE MAP  
SGS THOMSON  
MICRO ELECTRONICS  
SOMERSET, NEW JERSEY

Ebasco Environmental

FIGURE 2



**SITE ASSESSMENT REPORT: ENVIRONMENTAL PRIORITIES INITIATIVE/  
PRELIMINARY ASSESSMENT (EPI-PA)**

**PART I: SITE INFORMATION**

1. Site Name/Alias SGS Thomson Micro Electronics  
Street 14 and 25 Schoolhouse Road  
City Somerset State NJ Zip 08873
2. County Somerset County Code 18 Cong. Dist. Unknown
3. EPA ID No. NJD044655140
4. Block No. 517.02 Lot No. 20.01
5. Latitude 40°N 31' 40" Longitude 74°N 34' 24"  
USGS Quad. Bound Brook, NJ
6. Owner SGS Thomson Micro Electronics Tel. No. 908-563-6300  
Street 25 Schoolhouse Road  
City Somerset State NJ Zip Code 08873  
Owner Siemens MC Tel. No. Unknown  
Street 14 Schoolhouse Road  
City Somerset State NJ Zip Code 08873
7. Operator SGS Thomson Micro Electronics  
Street 25 Schoolhouse Road Tel. No. 908-563-6300  
City Somerset State NJ Zip Code 08873

8. Type of Ownership

X Private                      O Federal                      O State  
 O County                      O Municipal                      O Unknown                      O Other

9. Owner/Operator Notification on File

O RCRA 3001 Date: \_\_\_\_\_ O CERCLA103C Date: \_\_\_\_\_  
 O None                      O Unknown

10. Permit                      Permit No.                      Expiration Date                      Comments

UST

11. Site Status

X Active                      O Inactive                      O Unknown

12. Years of Operation: 1969 to Present

13. Identify the types of waste sources (e.g., landfill, surface impoundment, piles, stained soil, above or below-ground tanks or containers, land treatment, etc.) on site. Initiate as many waste unit numbers as needed to identify all waste sources on site.

(a) Waste Sources

Waste Unit. No.	Waste Source Type	Facility Name for Unit
1	<u>Drum Storage Area</u>	<u>Hazardous Waste Storage Area</u>
2	<u>Neutralization System</u>	<u>Neutralization System</u>
3	<u>Holding Tank</u>	<u>Equalization Tank</u>
4	<u>Aboveground Tank</u>	<u>HCL Tank</u>
5	<u>Aboveground Tank</u>	<u>NaOH Tank</u>

(b) Other Areas of Concern

Contaminated soil and groundwater, from a reported spill of J-100 Stripper in 1983, exists directly north of the pole barn where the former hazardous waste storage area was located. The contaminated soil and groundwater was identified during the ECRA investigation of 1989. The area has not yet received a negative declaration from the NJDEPE.

14. Information available from:

Contact: Luz Martinez Agency: USEPA Tel. No.: (212)-264-4561

Preparer: Dorothea Downs Agency: Ebasco Date: August 5, 1992

## **PART II: WASTE SOURCE INFORMATION**

### **Waste Unit (No.) 1 - Drum Storage Area - Waste Storage Area (Plating Area)**

- 1. Identify the RCRA status and permit history, if applicable, and the age of the SWMU.**

The existing hazardous waste storage area was installed in 1983. In 1992, the contents of the existing hazardous waste storage area were transferred to the old plating area in the north building. The facility is considered to be a small quantity generator.

- 2. Describe the SWMU and clearly identify its location on a site map.**

The waste storage area contains waste in 55-gallon drums. There is also raw materials stored in this area. The waste storage area is located in the former plating room in the north building.

- 3. Identify the size or quantity of the waste (e.g., area or volume of a landfill or surface impoundment, number and capacity of drums or tanks). Specify the quantity of hazardous substances in the waste unit.**

There were 165 gallons present in three 55-gallon drums in the waste storage area. The quantity of waste materials has diminished over the last year because SGS is moving to New York. The bare minimum is used to finish the last orders.

- 4. Identify the physical state(s) of the waste(s) as disposed of in the SWMU. The physical state(s) should be categorized as follows: solid, powder or fines, sludge, slurry, liquid or gas.**

The hazardous waste materials are wastestreams in liquid form.

- 5. Identify specific hazardous substance(s) known or suspected to be present in the SWMU.**

There was a total of three drums marked accordingly for 1,1,1-trichloroethane, flammable liquids, and freon.

- 6. Describe the containment of the SWMU unit as it relates to releases to groundwater, surface water, soil, and air.**

The waste storage area in the plating area has a cement floor. The drains in the floor have been sealed closed with cement.



**SWMU-Specific Conclusion:**

No release of hazardous substances is known, alleged, or suspected to have occurred in the existing waste storage area or the waste storage area in the old plating shop.

Ref. No. 1,2,28,33

## **PART II: WASTE SOURCE INFORMATION**

### **Waste Unit (No.) 1 - Drum Storage Area - Waste Storage Area (Plating Area)**

- 1. Identify the RCRA status and permit history, if applicable, and the age of the SWMU.**

The existing hazardous waste storage area was installed in 1983. In 1992, the contents of the existing hazardous waste storage area were transferred to the old plating area in the north building. The facility is considered to be a small quantity generator.

- 2. Describe the SWMU and clearly identify its location on a site map.**

The waste storage area contains waste in 55-gallon drums. There is also raw materials stored in this area. The waste storage area is located in the former plating room in the north building.

- 3. Identify the size or quantity of the waste (e.g., area or volume of a landfill or surface impoundment, number and capacity of drums or tanks). Specify the quantity of hazardous substances in the waste unit.**

There were 165 gallons present in three 55-gallon drums in the waste storage area. The quantity of waste materials has diminished over the last year because SGS is moving to New York. The bare minimum is used to finish the last orders.

- 4. Identify the physical state(s) of the waste(s) as disposed of in the SWMU. The physical state(s) should be categorized as follows: solid, powder or fines, sludge, slurry, liquid or gas.**

The hazardous waste materials are wastestreams in liquid form.

- 5. Identify specific hazardous substance(s) known or suspected to be present in the SWMU.**

There was a total of three drums marked accordingly for 1,1,1-trichloroethane, flammable liquids, and freon.

- 6. Describe the containment of the SWMU unit as it relates to releases to groundwater, surface water, soil, and air.**

The waste storage area in the plating area has a cement floor. The drains in the floor have been sealed closed with cement.

**SWMU-Specific Conclusion:**

No release of hazardous substances is known, alleged, or suspected to have occurred in the existing waste storage area or the waste storage area in the old plating shop.

Ref. No. 1,2,28,33

## **PART II: WASTE SOURCE INFORMATION**

### **Waste Unit (No.) 2 - Neutralization System - Neutralization System**

- 1. Identify the RCRA status and permit history, if applicable, and the age of the SWMU.**

The neutralization system was installed in 1986. MSC was permitted to discharge to Randolph Brook from the neutralization unit under NJPDES permit # NJ0067920. This permit was transferred to SGS when the south property was leased to them. The permit became expired when SGS did not renew the permit. The system is not in use and has not been for the last year.

- 2. Describe the SWMU and clearly identify its location on a site map.**

The neutralization system is located adjacent to the process building

- 3. Identify the size or quantity of the waste (e.g., area or volume of a landfill or surface impoundment, number and capacity of drums or tanks). Specify the quantity of hazardous substances in the waste unit.**

The neutralization system holds 1000 gallons of acid wastestream, HCL, and NaOH in the area just west of the process building.

- 4. Identify the physical state(s) of the waste(s) as disposed of in the SWMU. The physical state(s) should be categorized as follows: solid, powder or fines, sludge, slurry, liquid or gas.**

The system neutralized the acid wastestream. Therefore, the physical state would be liquid.

- 5. Identify specific hazardous substance(s) known or suspected to be present in the SWMU.**

The acid wastestream, hydrochloric acid, and caustic soda (also known as sodium hydroxide).

- 6. Describe the containment of the SWMU unit as it relates to releases to groundwater, surface water, soil, and air.**

The neutralization system is set in a cement bay with a lift pump to return any spilled water to the equalization tank.



**SWMU-Specific Conclusion:**

No release of hazardous substances is known, alleged, or suspected to have occurred from the neutralization system.

Ref. No. 1,2,28,33

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## **PART II: WASTE SOURCE INFORMATION**

### **Waste Unit (No.) 3 - Holding Tank - Equalization Tank**

- 1. Identify the RCRA status and permit history, if applicable, and the age of the SWMU.**

The equalization tank was installed in 1986 to store the acid wastestream prior to neutralization.

- 2. Describe the SWMU and clearly identify its location on a site map.**

The equalization tank is located on the same cement pad with the neutralization system. The area is located adjacent to the west side of the process building.

- 3. Identify the size or quantity of the waste (e.g., area or volume of a landfill or surface impoundment, number and capacity of drums or tanks). Specify the quantity of hazardous substances in the waste unit.**

The equalization tank holds 1000 gallons of acid wastestream.

- 4. Identify the physical state(s) of the waste(s) as disposed of in the SWMU. The physical state(s) should be categorized as follows: solid, powder or fines, sludge, slurry, liquid or gas.**

The equalization tank holds liquids.

- 5. Identify specific hazardous substance(s) known or suspected to be present in the SWMU.**

The acid wastestream contained varying amounts of acetic acid, ammonium hydroxide, hydrochloric acid, hydrofluoric acid, hydrogen peroxide, nitric acid, phosphoric acid, and sulfuric acid.

- 6. Describe the containment of the SWMU unit as it relates to releases to groundwater, surface water, soil, and air.**

The equalization tank is set in a cement bay with the neutralization system. A lift pump returns any spilled water back into the equalization tank.

### **SWMU-Specific Conclusion:**

No release of hazardous substances is known, alleged, or suspected to have occurred from the neutralization system.

Ref. No. 1,2,28,33

## **PART II: WASTE SOURCE INFORMATION**

### **Waste Unit (No.) 4 - Aboveground Tank - HCL Tank**

- 1. Identify the RCRA status and permit history, if applicable, and the age of the SWMU.**

The Hydrochloric (HCL) Acid tank was installed in 1986 to store the hydrochloric acid needed to neutralize the acid wastestream should too much caustic soda had been added.

- 2. Describe the SWMU and clearly identify its location on a site map.**

The HCL tank is located on the same cement pad with the neutralization system. The area is located adjacent to the west side of the process building. The cement area is fenced and locked.

- 3. Identify the size or quantity of the waste (e.g., area or volume of a landfill or surface impoundment, number and capacity of drums or tanks). Specify the quantity of hazardous substances in the waste unit.**

The HCL tank holds 2000 gallons of hydrochloric acid.

- 4. Identify the physical state(s) of the waste(s) as disposed of in the SWMU. The physical state(s) should be categorized as follows: solid, powder or fines, sludge, slurry, liquid or gas.**

The hydrochloric acid is in a liquid state.

- 5. Identify specific hazardous substance(s) known or suspected to be present in the SWMU.**

The HCL Tank is filled with hydrochloric acid.

- 6. Describe the containment of the SWMU unit as it relates to releases to groundwater, surface water, soil, and air.**

The HCL tank is set in a cement bay with the neutralization system. A lift pump returns any spilled water back into the equalization tank.

### **SWMU-Specific Conclusion:**

No release of hazardous substances is known, alleged, or suspected to have occurred from the neutralization system.

Ref. No. 1,2,28,33

## **PART II: WASTE SOURCE INFORMATION**

### **Waste Unit (No.) 5 - Aboveground Tank - NaOH Tank**

- 1. Identify the RCRA status and permit history, if applicable, and the age of the SWMU.**

The Sodium hydroxide (NaOH) tank was installed in 1986 to store the sodium hydroxide or caustic soda needed to neutralize the acid wastestream.

- 2. Describe the SWMU and clearly identify its location on a site map.**

The NaOH tank is located on the same cement pad with the neutralization system. The area is located adjacent to the west side of the process building. The cement area is fenced and locked.

- 3. Identify the size or quantity of the waste (e.g., area or volume of a landfill or surface impoundment, number and capacity of drums or tanks). Specify the quantity of hazardous substances in the waste unit.**

The NaOH tank holds 4500 gallons of sodium hydroxide.

- 4. Identify the physical state(s) of the waste(s) as disposed of in the SWMU. The physical state(s) should be categorized as follows: solid, powder or fines, sludge, slurry, liquid or gas.**

The sodium hydroxide is in a liquid state.

- 5. Identify specific hazardous substance(s) known or suspected to be present in the SWMU.**

The NaOH Tank is filled with sodium hydroxide.

- 6. Describe the containment of the SWMU unit as it relates to releases to groundwater, surface water, soil, and air.**

The NaOH tank is set in a cement bay with the neutralization system. A lift pump returns any spilled water back into the equalization tank.

### **SWMU-Specific Conclusion:**

No release of hazardous substances is known, alleged, or suspected to have occurred from the neutralization system.

Ref. No. 1,2,28,33



### PART III. PREVIOUS INVESTIGATIONS

#### EXISTING ANALYTICAL DATA (IF ANY)

Several soil and groundwater samples have been collected at the SGS site. All of the samples focus on the contaminated soil which resulted from a spill of J-100 Stripper. MSC had reported a spill of J-100 Stripper, a proprietary solvent, in the former hazardous waste storage area in 1983. The spilled material drained to the north and northeast, off the asphalt pad, onto the soil. MSC excavated soil from this area, after the spill, in 1983. Enviro Sciences, Inc. were contracted by MSC to collect post excavation samples in February 1989. MSC performed this investigation to document the effectiveness of the clean-up so the property could be sold. The sampling results were submitted as part of Evaluation Cleanup Responsibility Act (ECRA) case 88B-51. The samples indicated the presence of 1,1,1-trichloroethane in the soil. The results were compared to the ECRA guideline levels for volatile organic compounds (VOCs) and found to be below these limits.

In the Fall of 1989, SGS contracted Metcalf and Eddy Technologies to perform additional investigations in the former waste storage area where the spill had occurred. The results of the investigation revealed that residual contamination remained off or near the paved area. Additional sampling was performed to determine the extent of contamination present and to determine if additional remediation was necessary. The sampling results indicated 1,1,1-trichloroethane, tetrachloroethylene, 1,1-dichloroethane and dichlorobenzene in the soil. The area was excavated further following the Metcalf and Eddy investigation. The asphalt pavement and soils excavated were hauled offsite for disposal as hazardous waste. Post excavation sampling indicated the presence of volatile organic compounds at levels slightly above the ECRA guideline. A Sampling and Clean-up Report was provided to the NJDEPE with detailed information on the work completed and the documentation of this work which was done "at peril". The NJDEPE reviewed the document and determined that further investigation to determine the extent of the contamination would need to be done.

An ECRA Sampling Plan was prepared by Lan Associates for MSC in September 1990. The results of this investigation were compiled in the Results of ECRA Sampling Plan Implementation report dated March 12, 1991. The analytical data indicated that no contamination existed in the soil but contamination did exist in the groundwater. A total of three soil samples were collected. The soils were analyzed for priority pollutant volatile organics with a forward search of the first fifteen tentatively identified compounds (vo+15). The soil results were non-detect for the volatile organics and the tentatively identified compounds. A total of three monitoring wells were also sampled. The monitoring wells were analyzed for vo+15, Base Neutral/Acid Extractables+25, priority pollutant metals, methyl ethyl ketone, ethanol, 4-methyl-2-pentanone, cyanide, total dissolved solids and pH. The groundwater sampling results indicated VOC contamination in MW-1, MW-2 and MW-3. The results from MW-1, the background well, reported total volatile organic compounds at 10.8 ppb. This was slightly above the ECRA guideline for total organic compounds at 10.0 ppb. The major contaminants in this well were 1,1,1-trichloroethane at 3.0 ppb and trichloroethane at 6.5 ppb. The results from monitoring well MW-2 revealed a total volatile organic compounds concentration of 855 ppb. The major contaminants at MW-2 were 1,1-dichloroethene at 140 ppb and 1,1,1-trichloroethane at 680 ppb.

Both of these compounds are considered to be degradation compounds to tetrachloroethene a constituent of the J-100 Stripper. Monitoring well MW-3 detected methylene chloride at 3.8 ppb, 1,1,1-trichloroethene at 3.9 ppb, and trichloroethene at 1.2 ppb. The other parameters tested for had results below the ECRA guideline levels.

A second confirmational round of groundwater sampling was completed in January 1991. The results of the sampling event were also reported in the Results of ECRA Sampling Plan Implementation dated March 12, 1991. The results of the second round of groundwater sampling confirmed the presence of 1,1,1-trichloroethane and 1,1-dichloroethene. The concentrations were considerably lower than the first round of groundwater sampling. The background well, MW-1, had a total volatile organic compound concentration at 11.9 ppb just above the ECRA guideline of 10.0 ppb. The total volatile organic concentration at MW-2 was 244.6 ppb. The major components were 1,1-dichloroethane at 47 ppb and 1,1,1-trichloroethane at 190 ppb. Dichloroethene was detected in MW-2 at 76 ppb. The concentration of volatile organic in MW-3 increased to a total of 27.2 ppb up from 8.9 ppb in the first round of sampling. Methylene chloride, 1,1-dichloroethene, trichloroethene, 1,1-dichloroethane, and 1,1,1-trichloroethane were present in MW-3 at concentrations 1.1 ppb, 1.1 ppb, 1.5 ppb, 8.5 ppb, and 15 ppb, respectively.

In August 1991, the additional investigation of the contamination at the site was completed. The NJDEPE reviewed the results and determined that the vertical extent of the contamination was not sufficiently defined. The results of the investigation showed once again elevated levels of volatile organic compounds in the groundwater. The specific area of concern to the NJDEPE was near MW-2 where the highest levels of contamination were found.

On August 4, 1992, Siemens, owner of MSC, submitted to the NJDEPE the Results of Additional Groundwater Quality Delineation at the MSC site. During this investigation a cluster of monitoring wells in the area of MW-2 were installed to delineate the vertical contamination. The monitoring wells were sampled in May 1992 for voc+15. General water chemistry analysis was also performed on the cluster wells (MW-2, MW-2A, and MW-2B). The analytical results indicated even lower levels of contamination in the groundwater than the previous data had indicated. In MW-1 and MW-3, the levels detected were below the NJDEPE proposed clean-up levels except for trichloroethene at 5.5 ppb and 2.6 ppb, respectively. Elevated levels were reported in MW-2. The levels were above the proposed NJDEPE levels for 1,1-dichloroethene, 1,1,1-trichloroethane, trichloroethene, and 1,1,2-trichloroethane at 190 ppb, 760 ppb, 4.1 ppb, and 3.6 ppb, respectively. The intermediate monitoring well, MW-2A, at 70 feet below ground surface showed 1,1-dichloroethane at 3.0 ppb (1 ppb above the NJDEPE clean-up level). The deep monitoring well, MW-2B, reported no contamination. The MSC drinking water well was also sampled and this did not have any contamination. The final well sampled was MW-4, a downgradient well, which also did not have any contamination. As a result of the analytical data, Siemens' submitted the Results of Additional Groundwater Quality Delineation document to the NJDEPE with a negative declaration request for the site. The negative declaration was justified by indicating that the compounds detected in MW-2 are confined to the MW-2 location, and that they have not migrated offsite or vertically. Siemens agreed to sample monitoring well, MW-2, under a NJPDES discharge to groundwater permit in order to monitor the well. The NJDEPE is currently reviewing the document submitted August 4, 1992. ECRA Case #89560 is not closed at this time.

## SITE RECONNAISSANCE RESULTS

Two site reconnaissances were held at the SGS site by Ebasco Services Incorporated (Ebasco). The first site visit, on August 4, 1992, incorporated the 25 Schoolhouse Road address. A tour of the facility was taken which included the north building, the pole barn, the existing and former waste storage areas, and the office trailer. The north building occupied the process lines, the vapor degreaser, and the current waste storage area. The process lines were similar to a laboratory. The chemicals used were mostly acids which were disposed of in the acid wastestream. The acid wastestream was contained in 55 gallon drums in the current waste storage area. The current waste storage area is located within the north building in the former plating shop. Three drums of acid wastestream were stored in this area. The storage area, in the former plating shop, was identified as a solid waste management unit. Limited wastes were onsite because production has diminished. The facility has been purchased by MPD and is moving to Long Island, New York within six months. New orders are not excepted at the facility. The pole barn contained several clean empty drums. Air monitoring in this area did not register anything above background. The existing storage area, which is directly east of the pole barn, was completely empty. There was no evidence of any spills in this area. The area was fenced and did have a containment dike along the walls. The former waste storage area was also observed. The ground surface was fill material. There were four monitoring wells along the boundary of the fill material. The wells were not all locked. There was no fence either to keep people out of the area. The vegetation did not appear to be stressed.

On August 12, 1992, the second site reconnaissance was performed at the SGS site. The site visit focused on the property south of Schoolhouse Road. This property is owned by Siemens and is currently abandoned. A tour of the south building, the process building and the neutralization system was taken. The south building and the process building was completely vacant. Some machinery was noted but was obviously not in use. Siemens is in the process of selling the property. The neutralization system is still onsite. Four tanks were associated with this unit. Each tank was identified as a solid waste management unit. The four tanks included the neutralization tank, the equalization tank, the HCL tank and the NaOH tank. The tanks are currently filled with chemicals. Siemens is attempting to sell the hydrochloric acid (HCL) and the Sodium Hydroxide (NaOH) which was used to neutralize the acid wastestream. The neutralization system is fenced and is contained in a cement bay. The soil and vegetation surrounding the south property did not appear to be stressed during the site reconnaissance. In fact, 27 acres of virgin woodland occupy the south end of the south property. Air monitoring, during the site tour, did not detect anything above background.

## **PART IV: HAZARDOUS WASTE ASSESSMENT**

### **GROUNDWATER ROUTE**

- 1. Describe the likelihood of the release of contaminant(s) to the groundwater as follows: observed release, suspected release, or none. Identify contaminants detected or suspected and provide rationale for attributing them to the site. For observed release, define supporting analytical evidence.**

The groundwater at the site was determined to be contaminated. The NJDEPE in conjunction with Siemens have investigated the former waste storage area which was utilized in the past by MSC. As part of the investigation, monitoring wells were installed. Sampling of these well has determined that groundwater in the shallow wells is contaminated with varying amounts of tetrachloroethylene, 1,1,1-trichloroethane, 1,1-dichloroethane, dichlorobenzene, 1,2-dichloroethene, 1,1-dichloroethene, trichloroethene, and methylene chloride. Contamination was found in the shallow wells and the intermediate well at 70 feet. The deep drinking water well, at 300 feet, did not show any contamination. The organics found in the wells are used at the facility or are degradation compounds of materials used at the facility. A spill of J-100 Stripper (a propriety solvent) was documented at the site and contains many of these organics.

Ref. No. 1, 2, 3, 4, 10

- 2. Describe the aquifer of concern; include information such as depth, thickness, geologic composition, areas of karst terrain, permeability, overlying strata, confining layers, interconnections, discontinuities, depth to water table, groundwater flow direction.**

The Brunswick Formation lies beneath the site and contains the aquifer of concern. The Brunswick Formation is approximately 6000 to 8000 feet thick. The formation is encountered between 4.5 and 10 feet below the ground surface. The Brunswick Formation is made up of Triassic age red shales and siltstones. The portion directly beneath the site is a heavily weathered shale. Water is encountered at a depth near 18 feet. The hydraulic conductivity of the shale is  $2 \times 10^{-5}$  cm/sec. The groundwater flows to the northwest. A well cluster was installed at the site to differentiate between the water bearing zones in the formation. The shallow well was set at a depth of 45 feet, the intermediate well at 72 feet and the deep well at 165 feet. Contamination was found in the shallow and intermediate wells proving continuity between these two water zones. The deep well did not have any contamination. This means that a discontinuity exists or that the contamination has not migrated that far yet. The groundwater is used for drinking water in the site area.

Ref. No. 1, 2, 5, 7, 10, 11



**3. Is a designated well head protection area with 4 miles of the site?**

There are no designated well head protection areas within the State of New Jersey.

Ref. No. 6

**4. What is the depth from the lowest point of waste disposal/storage to the highest seasonal level of the saturated zone of the aquifer of concern?**

The groundwater is contaminated at the site to a known depth of 70 feet. The J-100 Stripper that was spilled was deposited directly on the ground surface. The aquifer of concern is at a depth near 18 feet.

Ref. No. 1, 2, 4, 10

**5. What is the permeability value of the least permeable intervening stratum between the ground surface and the aquifer of concern?**

The permeability is moderately slow in the subsoil which lies above the weathered Brunswick Shale.

Ref. No. 7

**6. What is the net precipitation for the area?**

The mean annual total precipitation for the site vicinity is 44.78 inches. The evapotranspiration data for the area was unavailable.

Ref. No. 8

**7. What is the distance to and depth of the nearest well that is currently used for drinking purposes?**

The SGS site maintains two drinking water wells. One is located at 14 Schoolhouse Road and the other at 25 Schoolhouse Road. The depth of the wells is 350 feet and 300 feet, respectively. The 300 feet deep well, located at 25 Schoolhouse Road, supplies drinking water to the employees at the SGS plant.

Ref. No. 3, 9

8. If a release to groundwater is observed or suspected, determine the number of people that obtain drinking water from wells that are documented or suspected to be located within the contaminated boundary of release.

Groundwater has been determined to be contaminated at the site. The number of people that obtain drinking water within 1/8 mile of the site equals 36. This number includes the 35 people employed by SGS and the one person employed by Siemens at the site. The aquifer or water bearing zone that these people draw their drinking water from is not contaminated.

Ref. No. 1, 3, 10, 12, 13, 28

9. Identify the population served by wells located within 4 miles of the site that draw from the aquifer of concern.

<u>Distance</u>	<u>Population</u>
0-1/4 mi.	36
>1/4-1/2 mi.	10
>1/2-1 mi.	3252
>1-2 mi.	3298
>2-3 mi.	3298
>3-4 mi.	3298

Ref. No. 13, 26, 29, 30, 31

10. Identify uses of groundwater within 4 miles of the site (i.e., private drinking source, municipal source, commercial, irrigation, unusable).

The groundwater is used within 4 miles of the site for drinking water and for commercial use. Water is used commercially in some area manufacturing processes.

Ref. No. 2, 7

## **SURFACE WATER ROUTE**

- 11. Describe the likelihood of a release of contaminant(s) to surface water as follows: observed release, suspected release, or none. Identify contaminants detected or suspected and provide a rationale for attributing them to the site. For observed release, define the supporting analytical evidence.**

The extent of contamination to the groundwater has been defined at the site. The distance that the contamination in the groundwater travelled is much shorter than the distance to the closest surface water. Since the soil contamination has been remediated, there is no likelihood of overland transport to the nearest surface water. Therefore, a release to surface water is not suspected.

Ref. No. 1, 10, 13

- 12. Identify the nearest downslope surface water if possible, include a description of possible surface drainage patterns from the site.**

Randolph Brook is the nearest downslope surface water to the site. The USGS topographic map of the site area indicates the ground surface to be sloping to the northwest towards Randolph Brook. Randolph Brook flows north into the Delaware and Raritan Canal. The Delaware and Raritan Canal meets the Raritan River and together they flow east to the ocean.

Ref. No. 13, 14

- 13. What is the distance to the nearest downslope surface water? Measure the distance along a course that runoff can be expected to follow.**

Randolph Brook is the closest surface water body with a straight line distance of 2150 feet to the northwest of the site.

Ref. No. 13

- 14. Define the floodplain that the site is located within.**

The site is located outside the 500 year flood plain.

Ref. No. 15, 16

- 15. What is the 2-year, 24-hour rainfall.**

The 2-year, 24-hour rainfall is 2.97"

Ref. No. 17

16. Identify drinking water intakes in surface waters within 15 miles downstream of the site. For each intake identify: the distance from the point of surface water entry, population served, and stream flow at the intake location.

<u>Intake</u>	<u>Distance</u>	<u>Population Served</u>	<u>Flow (MGD)</u>
Middlesex Water Company	9 miles	125,000	40
New Brunswick Water	12 miles	100,000	10.5

Ref. No. 13, 14, 18, 19, 20

17. Identify fisheries that exist within 15 miles downstream of the point of surface water entry. For each sensitive environment specify the following:

<u>Fishery</u>	<u>Water Body Type</u>	<u>Flow (cfs)</u>
Randolph Brook	River	unknown
Raritan River	River	unknown
Delaware-Raritan Canal	Canal	unknown
Raritan Bay	Ocean Bay	unknown

Ref. No. 13, 14, 21

18. Identify sensitive environments that exist within 15 miles of the point of surface water entry. For each sensitive environment specify the following:

<u>Environment</u>	<u>Water Body Type</u>	<u>Flow (cfs)</u>
Wetlands	Wetlands	<10 cfs
Randolph Brook	River	unknown
Raritan River	River	unknown
Delaware-Raritan Canal	Canal	unknown
Raritan Bay	Ocean Bay	unknown

There are also Endangered and Threatened Environments listed within Somerset and Middlesex Counties. The exact locations of these species are not available but, could be within 15 miles of the site.

Ref. No. 13, 14, 22, 23

19. If release to surface water is observed or suspected, identify any intakes, fisheries, and sensitive environments from question Nos. 16-18 that are or may be located within the contamination boundary of the release.

Intake

Fishery

Environment

A release to the surface water from the site was not observed nor is one suspected.

Ref. No. 1, 10

**SOIL EXPOSURE PATHWAY**

20. Determine the number of people that occupy residences or attend school or day care on or within 200 feet of the site property.

There are no residences, schools, or day care centers within 200 feet of the site.

Ref. No. 7, 13, 28

21. Determine the number of people that work on or within 200 feet of the site property.

There are currently 35 people employed by SGS. Siemens employs one maintenance men at the south building. There are no other companies within 200 feet of the site. Therefore, the total number of people that work on or within 200 feet of the site is 36.

Ref. No. 12, 13, 28

22. Identify terrestrially sensitive environments on or within 200 feet of the site property.

There are no terrestrially sensitive environments identified within 200 feet of the site. There are terrestrially sensitive species identified by the New Jersey Natural Heritage Program in Somerset and Middlesex Counties but the exact locations of these species is not available. The south end of the site is virgin woodlands which could support many of the endangered and threatened terrestrial species.

Ref. No. 7, 13, 23



## AIR ROUTE

23. Describe the likelihood of release of contaminants to air as follows: observed release, suspected release, or none. Identify contaminants detected or suspected and provide a rationale for attributing them to the site. For observed release define the supporting analytical evidence.

There are no suspected or observed releases to the air. The contaminated soil has been removed from the area of concern, therefore, no contaminants can migrate through wind dispersion. The facility is also inspected by the NJDEPE Air Pollution Division. There have been no violations filed against the SGS site with the NJDEPE. SGS holds an air permit for a scrubber unit but the scrubber is not used and is for sale. The last inspection by the NJDEPE, in July 1992, reported that SGS would need to get an air permit for the vapor degreaser. SGS is in the process of obtaining this permit.

Ref. No. 1, 2, 10, 24, 28

24. Determine populations that reside within 4 miles of the site.

<u>Distance</u>	<u>Population</u>
0-1/4 mi.	0
>1/4-1/2 mi.	65
>1/2-1 mi.	2,352
>1-2 mi.	9,709
>2-3 mi.	11,484
>3-4 mi.	31,120

Ref. No. 13, 25, 26, 27

25. Identify sensitive environments and wetlands acreage within 1/2 mile of the site.

<u>Sensitive Environment Type</u>	<u>Distance</u>
Randolph Brook	2150'

There are no wetlands within 1/2 mile of the site. Sensitive environments have been identified by the New Jersey Natural Heritage Program in Somerset County which covers the 1/2 mile radius of the site. The actual locations of the sensitive environments are not identified. However, the south end of the site is virgin woodland which could support some of the listed endangered and threatened species. The surrounding area is an industrial park which would not support any sensitive environments.

Ref. No. 13, 22, 23

- 26. If a release to air is observed or suspected, determine the number of people that reside or are suspected to reside within the area of the air contamination from the release.**

A release to the air is not suspected

Ref. No. 1, 2, 10, 24, 28

- 27. If a release to air is observed or suspected, identify any sensitive environments, listed in question 25, that are or may be located within the area of air contamination from the release.**

A release to the air is not suspected.

Ref. No. 1, 2, 10, 24, 28

## REFERENCE LIST

## REFERENCES

- 1) ECRA Case #89560 - Results of ECRA Sampling Plan Implementation, submitted to NJDEPE on March 12, 1991.
- 2) ECRA Case #89560 - ECRA Sampling Plan, Microwave Semiconductor Corporation, submitted to NJDEPE on September 25, 1990.
- 3) SGS Drinking Water Analytical Data, QC Incorporated, August 5, 1992.
- 4) Record of Telephone Conversation between Mark Souders (NJDEPE Bureau of Environmental Evaluation and Cleanup Responsibility Assessment) and Dorothea Downs (Ebasco) dated August 10, 1992.
- 5) The Geology of New Jersey, Department of Conservation and Development State of New Jersey, New Jersey Printing Company, 1940.
- 6) Record of Telephone Conversation between Dan Van Abs (NJDEPE Wellhead Protection Program) and Kara McGuirk (Ebasco) dated June 16, 1992.
- 7) Environmental Impact Assessment for Microwave Semiconductor Corporation, Lockwood Greene Engineers, July 12, 1985.
- 8) Climatic Atlas of the United States, United States Department of Commerce, 1963 (reprinted 1983).
- 9) Record of Telephone Conversation between Patty Elliot (Franklin Township Department of Health) and Dorothea Downs dated June 17, 1992.
- 10) ECRA Case #89560 - Results of Additional Groundwater Quality Delineation submitted August 4, 1992.
- 11) ECRA Case #89560 - Results of ECRA Sampling Plan Implementation, Appendix E & F, submitted March 12, 1992.
- 12) Record of Telephone Conversation between Harry Wister (SGS) and Dorothea Downs (Ebasco) dated July 7, 1992.
- 13) Bound Brook, New Jersey Quadrangle, United States Geological Survey, 1955 (revised 1977).
- 14) New Brunswick, New Jersey Quadrangle, United States Geological Survey, 1954 (revised 1981).

- 15) Record of Telephone Conversation between Frank Metz (Franklin Township Engineering Department) and Dorothea Downs (Ebasco) dated June 16, 1992.
- 16) Record of Telephone Conversation between Max Jakofsky (Core of Engineers) and Dorothea Downs (Ebasco) dated January 1, 1992.
- 17) Record of Telephone Conversation between Joe Schenk (Newark Weather Service) and Dorothea Downs (Ebasco) dated June 16, 1992.
- 18) Surface Water Intake Locations Report, NJDEPE Bureau of Safe Drinking Water, March 1992.
- 19) Facsimile Transmittal from Cheryl Silakoski (Middlesex Water Company) dated August 28, 1992.
- 20) Record of Telephone Conversation between Ed O'Rourke (New Brunswick Water Department) and Kara McGuirk dated August 11, 1992.
- 21) Record of Telephone Conversation between Bob Soldwetel (NJDEPE Freshwater Fisheries) and Dorothea Downs (Ebasco) dated June 16, 1992.
- 22) Monmount Junction NE, Freshwater Wetlands Map, New Jersey Department of Protection, 1986.
- 23) Potential Threatened and Endangered Vertebrate Species Reports for Somerset and Middlesex Counties, NJDEPE Natural Heritage Program, July 1992.
- 24) Record of Telephone Conversation between Tod Boyer (NJDEPE Air Pollution) and Dorothea Downs (Ebasco) dated July 7, 1992.
- 25) Graphical Exposure Modeling System, General Science Corporation, April 1990.
- 26) Record of Telephone Conversation between Maria Baratta (NJDEPE Library) and Kara McGuirk (Ebasco) dated June 18, 1992.
- 27) SGS Population Calculation Sheet, August 25, 1992.
- 28) Site Reconnaissance Logbook, Ebasco Services, Incorporated, August 4, 1992.
- 29) SGS Drinking Water Population Calculation Sheet, August 31, 1992.
- 30) Franklin Township Section, Map of Somerset County, New Jersey, 1991.
- 31) Record of Telephone Conversation between Chris Budsock (Franklin Township Tax Collectors Office) and Dorothea Downs (Ebasco) dated June 18, 1992.

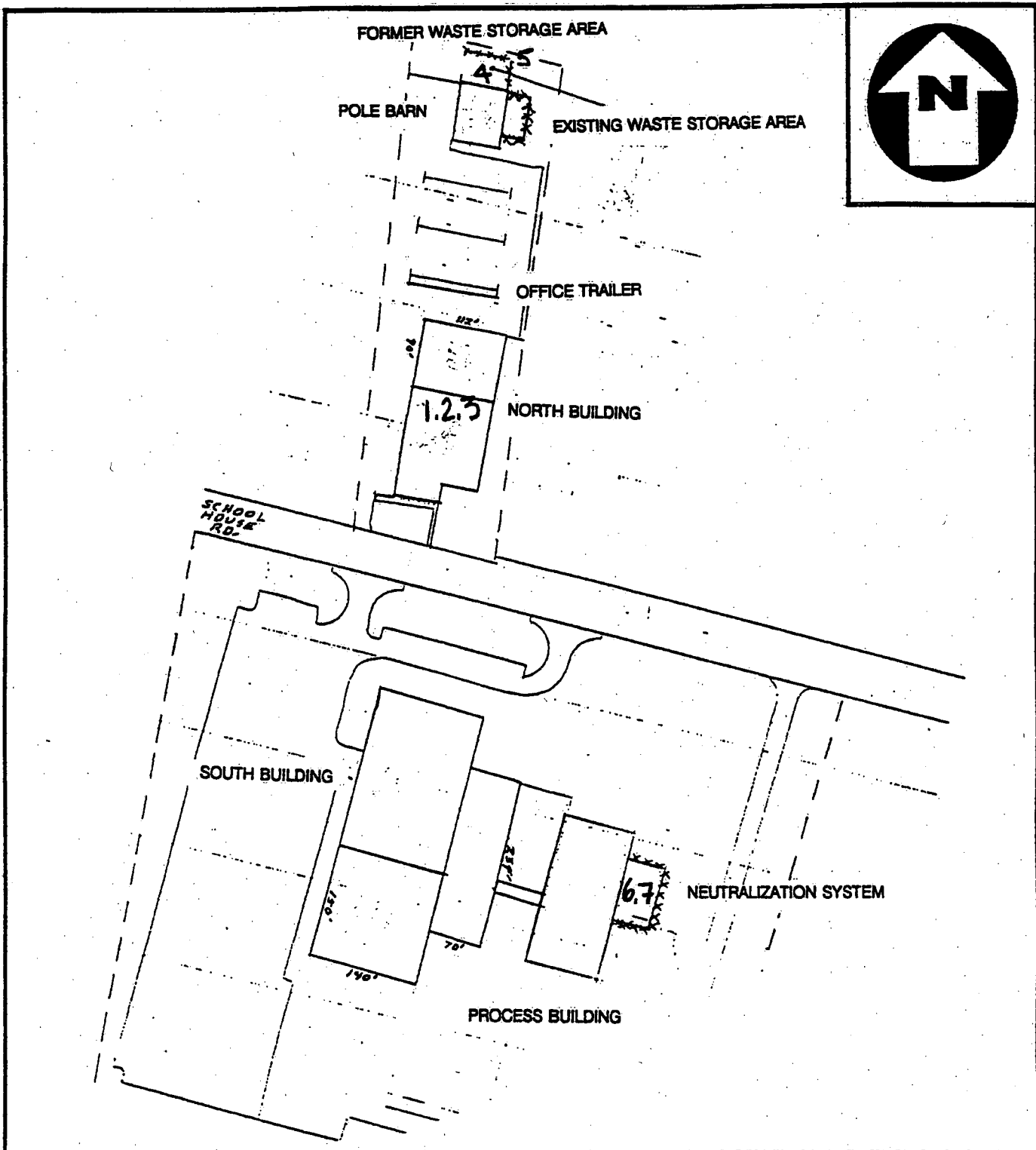


- 32) Record of Telephone Conversation between Mrs. Norman Fisher and Dorothea Downs (Ebasco) dated August 31, 1992.
- 33) Compliance Evaluation Inspection for Microwave Semiconductor Corporation, USEPA, November 22, 1988.

**ATTACHMENT A**

## PHOTO LOG

- 1) PHOTO #1 - Drums in the Storage Area (Former Plating Shop) in the North Building.  
Taken: August 4, 1992 Facing: North
- 2) PHOTO #2 - Wastestream Drums in the Storage Area (Former Plating Shop) in the North Building.  
Taken: August 4, 1992 Facing: North
- 3) PHOTO #3 - Vapor Degreasing Unit in North Building.  
Taken: August 4, 1992 Facing: East
- 4) PHOTO #4 - Drums of freon used in Degreasing Unit. Freon replaced every 2-3 months.  
Taken: August 4, 1992 Facing: North
- 5) PHOTO #5 - Monitoring wells on north end of site near the Former Drum Storage Area.  
Taken: August 4, 1992 Facing: North
- 6) PHOTO #6 - The Equalization Tank of the Neutralization System on south property.  
Taken: August 4, 1992 Facing: West
- 7) PHOTO #7 - Neutralization System on south property.  
Taken: August 4, 1992 Facing: West



NOT TO SCALE

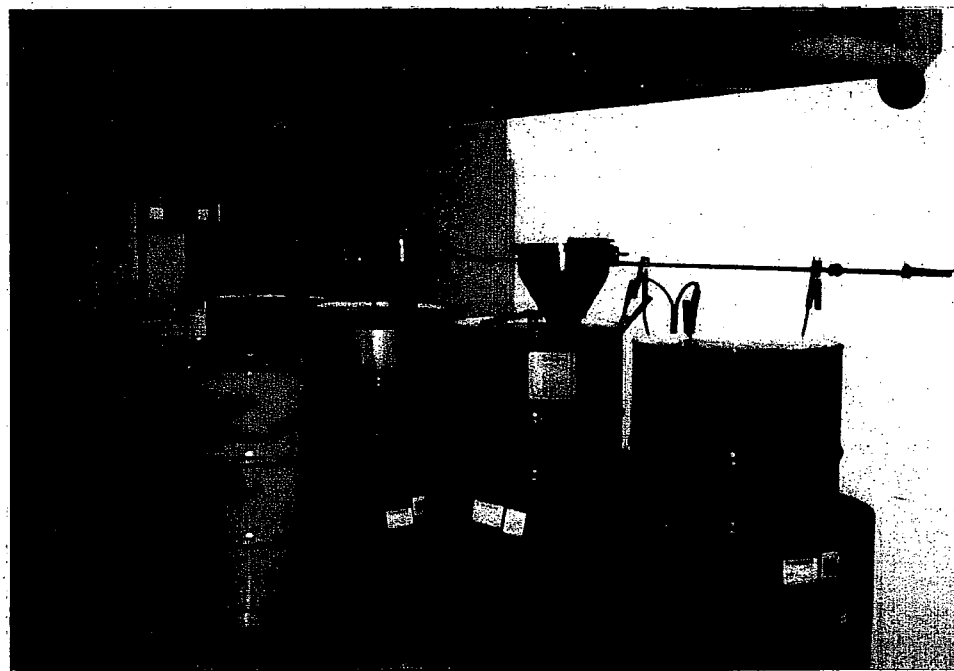
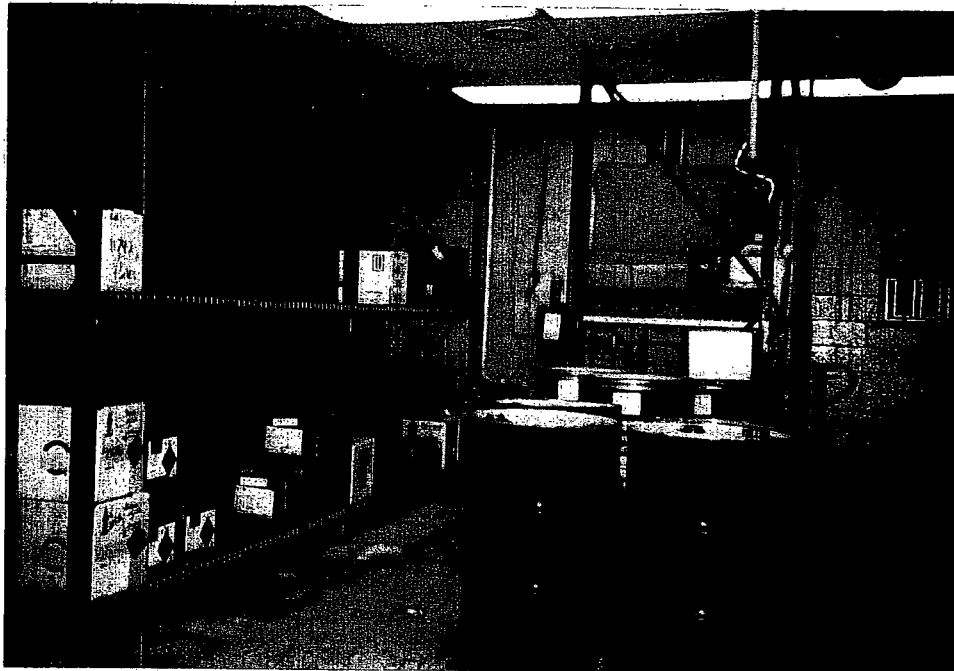
Figure taken from  
Microwave Semiconductor Corporation (MSC)  
Part A Permit Application

PHOTO-LOCATION MAP

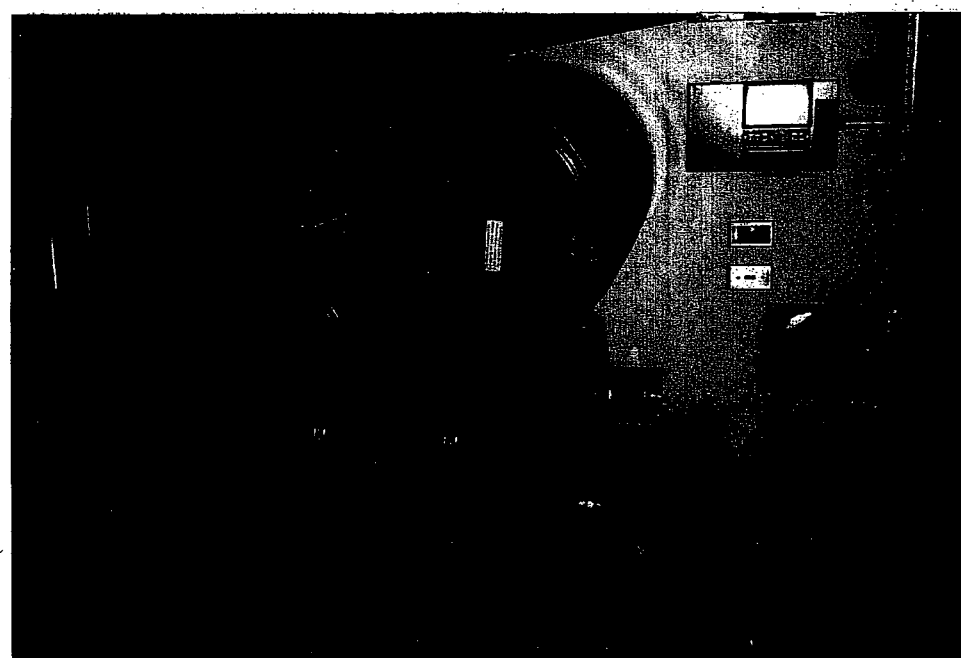
SITE MAP  
SGS THOMSON  
MICRO ELECTRONICS  
SOMERSET, NEW JERSEY

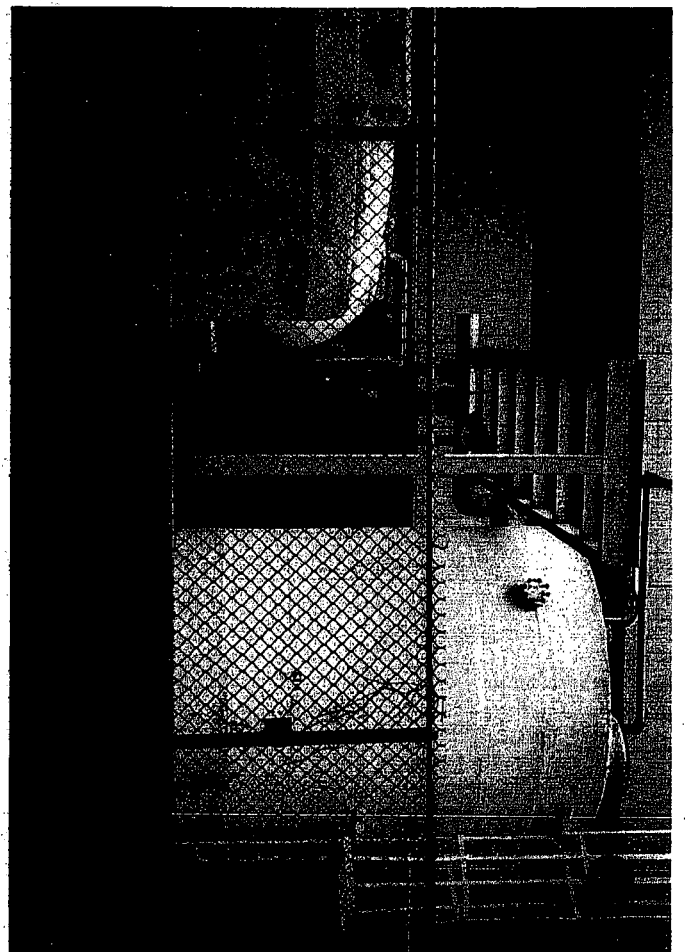
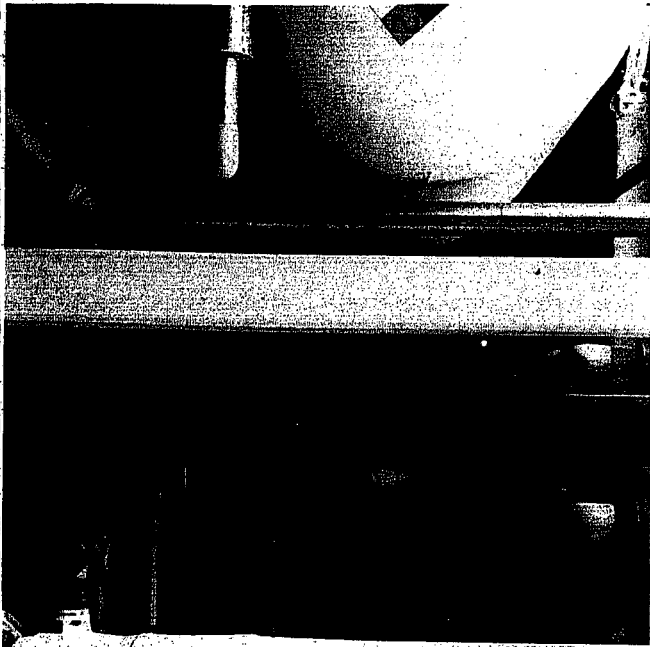
Ebasco Environmental

FIGURE 2



45







## REFERENCES

**REFERENCE 1**

RESULTS OF  
ECRA SAMPLING PLAN  
IMPLEMENTATION

Microwave Semiconductor Corp.  
North Building  
100 School House Road  
Somerset, New Jersey

ECRA Case #89560

Submitted to:

Division of Waste Management  
Bureau of Environmental Evaluation &  
Cleanup Responsibility Assessment  
401 East State Street  
Trenton, NJ 08625

Attn: Mr. Mark R. Souders,  
Case Manager

LAN Job #2.3177.1  
Date: March 12, 1991

RECEIVED

MAR 15 1991

T. McGEOUGH

**LAN**  
LAN ASSOCIATES

ENGINEERING ■ PLANNING ■ ARCHITECTURE  
662 GOFFLE ROAD, HAWTHORNE, N.J. 07506-3499

201-423-0350

FAX ■ 201-423-5175

## 1.0 Introduction

This report of Results of ECRA Sampling Plan Implementation is submitted in response to the DEP review letter dated October 19, 1990 (Appendix A) relative to the September 27, 1990 ECRA Sampling Plan. An "at-peril" cleanup involved excavation and disposal of contamination below the asphalted area to the north of the pole barn at the Microwave Semiconductor Corp. facility, Somerset, New Jersey. This area was previously used for waste chemical storage. A spill of J-100, a proprietary solvent mixture, occurred in 1983. The spilled material drained off the asphalt pad onto the soil to the north and northeast. Soil was excavated from this area in 1983. Post excavation samples were collected on February 3, 1989 by Enviro-Sciences, Inc. personnel to document the effectiveness of the cleanup. The details of the cleanup have been submitted as part of ECRA Case 88B-51. This area was also inspected by Carol Lynn Heck of DEP. Post excavation sample results indicated the presence of 1,1,1-Trichloroethane in the soil. The results were below the ECRA guideline for volatile organic compounds.

During the months of August and September 1989, Metcalf and Eddy Technologies Inc. personnel performed additional investigations in this area for the purchaser of the property, SGS-Thomson Microelectronics Inc. The results of the investigation revealed that residual contamination remained off or near the paved area. Additional sampling was performed to determine the extent of contamination present and to determine if additional remediation was required. The compounds detected included 1,1,1 Trichloroethane, Tetrachloroethylene, 1,1-Dichloroethane and Dichlorobenzene.

Following the delineation sampling and analysis, the asphalt pavement and soils in this area of contamination were excavated for off-site disposal as a hazardous waste. Post excavation samples were collected from both the base and sidewalls of the excavated area to verify the effectiveness of the cleanup. The Sampling and Cleanup Report submitted to DEP on May 2, 1990 provided a narrative summary covering the work completed and all supporting documentation required to facilitate ECRA review of the "at-peril" cleanup.

Two of the final post excavation samples associated with the "at-peril" cleanup indicated the presence of volatile organic compounds at levels slightly above the ECRA Guidelines (B-5, S-11). Because of this, the DEP requested that a well search be conducted and a groundwater and soil sampling plan be submitted to delineate the extent of volatile organic compounds. In addition, the horizontal extent of Acetone contamination at sample location S-11 was also to be delineated. The sample location plans and analytical summary tables for the previous sampling and analysis are provided as Appendix B.

In addition to implementing the sampling as described in the September 27, 1990 Sampling Plan as modified by the October 19, 1990 DEP letter, Microwave Semiconductor Corporation has conducted a well search of all wells located within a one-half mile radius of the facility, including all industrial, municipal, production, domestic and monitoring wells. Included with the well search are well specifications and a map depicting all well locations in relation to the site. Sources contacted include the NJDEP Bureau of Water Allocation and the local and county Health Departments.

A compressed red-shaley loam exists at a depth of approximately 7' below grade. Groundwater sampling was performed in the consolidated zone to investigate the potential for further vertical migration of volatile organic compounds (1,1,1-Trichloroethane, 1,1-Dichloroethane and Acetone). Soil sampling was also performed as a means for investigating the horizontal extent of Acetone contamination at location S-11.

## 2.0 Sample Collection/Investigations

The Sampling Plan Implementation included the collection and analysis of soil and groundwater samples. Since the spilled J-100 was a solvent mixture and residual compounds include Acetone, 1,1,1-Trichloroethane and 1,1-Dichloroethane, it was proposed that all samples be analyzed for Priority Pollutant Volatile Organics plus 15. The October 19, 1990 DEP letter added additional parameters for the groundwater analysis. The details of the sample collection are discussed below.

### 2.1 Soil Sampling

The soil sampling plan called for the collection of soil samples from borings around sample location S-11. The locations of soil samples are provided in Figure 2-1. The soil samples were collected on November 9, 1990 for volatile organic + 15 analysis.

A total of three locations were selected to investigate the horizontal extent of Acetone contamination at sample locations S-11. The samples were collected from locations to the west, north and northwest of sample location S-11. The areas to the south, southwest and east had been excavated as part of the "at-peril" cleanup and have been shown to be clean as evidenced by the results at sample locations B-7 and B-8. Additionally, sidewall samples to the south and northwest, S-10 and S-12 showed no detected Acetone or other volatile organic compounds. Samples were collected from the 18" to 24". Refer to Appendix B for previous sampling and analysis.

Soil samples were collected from hand augured borings with a 4" diameter stainless steel bucket auger. Soil samples were screened for volatile organics in the field with a Photovac TIP photoionization detector. The presence of any volatile organic contaminants was not detected. The soil was transferred from the auger to the sample containers with a stainless steel spatula. Samples were preserved as outlined in the DEP 1988 Field Sampling Procedures Manual (FSPM) and the September 27, 1990 Cleanup Plan and submitted to Enseco of Somerset, N.J. using strict chain-of-custody procedures.

### 2.2 Groundwater Samples

To investigate if contamination has traveled vertically, such that it has affect the groundwater, the soil sampling performed to date was supplemented by the installation of three monitoring wells. The locations of the wells are shown in Figure 2-1. The wells have been located to triangulate the asphalt pad area. As requested in Item 1 of the DEP October 19, 1990 letter, MW-2 and MW-3 are located within 30 feet of the excavation and downgradient of the area of environmental concern.

To allow access for the drilling to the monitoring well locations, the previously excavated area was backfilled with clean fill. Quarry process material from Stone Industries Inc., was utilized. The use of quarry process was required to provide a substantial base for the drilling and potential future repaving. Copies of the Stone Industries receipts are provided as Appendix C.

Due to the presence of shale at a depth of 7' below grade, the wells were completed in the consolidated materials. The wells were installed on October 13 and 14, 1990 by Samuel Stothoff Drilling. The wells were installed in accordance with DEP specifications, including

those requirements of the DEP October 19, 1990 letter. Copies of the Monitoring Well Records are provided as Appendix D. Boring logs for the monitoring wells are provided as Appendix E.

The monitoring well was sampled for the following analysis:

- Volatile Organics + 15 including Xylene
- Base Neutral/Acid Extractables + 25
- Priority Pollutant Metals
- Methyl Ethyl Ketone
- Ethanol
- Methanol
- 4-Methyl-2-pentanone
- Cyanide
- Total Dissolved Solids
- pH

The monitoring wells were purged and samples were collected as outlined in the FSPM. The monitoring well was purged via a decontaminated bladder pump. Due to the low recovery rate of the monitoring wells, the wells were pumped to a level just before dryness. Samples were then collected as soon as sufficient water entered the wells. The temperature, pH and conductivity were monitored, and samples were collected using dedicated laboratory cleaned bailers. Logs of the data collected at the time of the sample collection are provided as Appendix F. The volatile organic samples were collected first. Special care was taken to ensure that the bailer was inserted into the well in a manner which would not volatilize any compounds in the water.

Samples were then transferred to containers and preserved according to the FSPM and submitted to Enseco using strict chain-of-custody procedures.

### 2.3 Well Search

In addition to the groundwater sampling, a well search was also performed as required by the DEP October 19, 1990 letter. Information on nearby wells was obtained from Microwave Semiconductor, the DEP Bureau of Water Allocation and the Franklin Township Health Department. The Somerset County Health Department was also contacted. However, they referred us to Franklin Township. The search included inactive or abandoned public or private supply wells, industrial wells, municipal and domestic wells and monitoring wells.



### 3.0 Presentation and Discussion of Results

#### 3.1 Soil Samples

The results of the soil sampling analysis performed around S-11 are presented in Table 3-1. The complete Enseco laboratory report with chain-of-custody and QA/QC data is provided as Appendix G.

The results of volatile organic analysis are below detectable levels for all parameters for all three samples. These results show that the Acetone present at location S-11 is confined to the immediate area and has been delineated. Acetone was detected in the field and trip blanks at estimated concentrations (below detection limit) of 7.9 ppb and 7.7 ppb respectively. As indicated in the May 2, 1990 "at-peril" cleanup results, Acetone was used for cleaning of field equipment and its presence at S-11 was probably associated with the field sampling procedures. The hypothesis is further supported by the results of the soil sampling. No further action relative to the soil is proposed.

#### 3.2 Groundwater Samples

The results of groundwater sample analysis are presented in Table 3-2. Groundwater contour maps based on relative elevations are provided as Figures 3-1 and 3-2. The wells are scheduled to be surveyed by a licensed surveyor. Measurements of the relative elevations of the top of casing, depth to water and relative groundwater elevations, along with field observations are provided in Table 3-3. The direction of groundwater flow is toward the northwest. This direction is verified by the analytical results, discussions with the William Zinsser Company which has monitoring wells in the vicinity and from review of the valley trends running in a southwest to northeast direction as seen on the topo map (Figure 3-3). The gradient is approximately 0.05 feet/foot. Given an aquifer thickness of 5' to 10' and a hydraulic conductivity of  $2.0 \times 10^{-5}$  cm/sec for the shale material, the groundwater flow is estimated as 0.029 ft<sup>2</sup>/day per unit width of the aquifer. The average horizontal velocity of the groundwater is 0.011 ft/day, or 4.16 ft/yr. These estimates are based on homogeneous conditions within the shale unit. Nonhomogeneous conditions such as fractures, changes in lithology, bedding partings and weathering may alter the hydraulic conductivity of the shale material. These inhomogeneities may cause variations in hydraulic conductivity of plus or minus one order of magnitude. The complete Enseco laboratory report with chain-of-custody and QA/QC data is provided as Appendix H.

The results of all analysis are below ECRA guidelines for all parameters with the exception of volatile organics at monitoring wells MW-1 and MW-2. Methylene Chloride, 1,1,1-Trichloroethane and Trichloroethane were present in monitoring well MW-3 at estimated concentrations below the equipment detection limits. Methylene Chloride was also detected in the blanks. ✓

The total volatile organic compounds for monitoring well MW-1 was 10.8 ppb compared to an ECRA guideline of 10.0 ppb. Monitoring well MW-1 is the background, upgradient well. Methylene Chloride was present at 1.3 ppb. This compound was also present in the field, trip and method blanks and the concentration was estimated due to it being detected below the equipment detection limit. 1,1,1-Trichloroethane was present at 3.0 ppb, again, at an estimated concentration. Trichloroethene was present at 6.5 ppb. Given the upgradient location, low levels of contaminants, presence of compounds at estimated concentrations and

presence of 1 compound in the blanks, the results from this well are not of concern.

The results of volatile organics at monitoring well MW-2, the downgradient well, indicate total volatile organics detected was 855 ppb, in excess of the 10 ppb ECRA guideline. Methylene Chloride was present at 13 ppb. This compound was present in the blank and the concentration was estimated due to it being below the equipment detection limit. 1,1-Dichloroethane was present at 22 ppb, also at an estimated concentration.

The two major contaminants present at monitoring well MW-2 are 1,1-Dichloroethene and 1,1,1-Trichloroethane. The compounds were present at 140 ppb and 680 ppb respectively. Both of these compounds can be considered degradation products of Tetrachloroethene, a component of the spilled J-100 solvent. Both of these compounds were present in the post excavation soil samples.

A second round of groundwater samples was collected on January 28, 1991 for volatile organic analysis. The results of the confirmational sampling are included in Table 3-2. The complete Enseco laboratory report with QA/QC data and chain-of-custody is provided in Appendix I.

The results of the confirmational sampling confirm the presence of 1,1,1-Trichloroethane and 1,1-Dichloroethene as the two primary contaminants of concern. the concentrations were considerably lower for the second round.

The results of total volatile organic compounds at monitoring well MW-1 was 11.9, again only slightly above the ECRA guideline of 10 ppb. 1,1-Dichloroethane and 1,1,1-Trichloroethane were present at estimated concentrations of 2.3 ppb and 4.5 ppb respectively. Trichloroethene was present at 5.1 ppb. Again, given the upgradient location, confirmed low levels of contaminants, and presence of compounds at estimated concentrations, the results from this well are not a concern.

The results of volatile organics at monitoring well MW-2 indicate total volatile organics detected at 244.6 ppb, a drop in the total from 855 ppb for the first sampling event. 1,1-Dichloroethane was present at an estimated concentration of 7.6 ppb. The two major contaminants, 1,1-Dichloroethene and 1,1,1-Trichloroethane remain present, but at lower concentrations of 47 ppb and 190 ppb respectively.

The results of volatile organics at monitoring well MW-3 indicate total volatiles at 27.2 ppb, a slight increase from 8.9 ppb detected from the first sampling event. Methylene Chloride and 1,1-Dichloroethene were both present at an estimated concentration of 1.1 ppb. Trichloroethene was present at an estimated compound of 1.5 ppb. The two primary contaminants of concern 1,1-Dichloroethane and 1,1,1-Trichloroethane were present at this well at concentrations of 8.5 ppb and 15 ppb respectively.

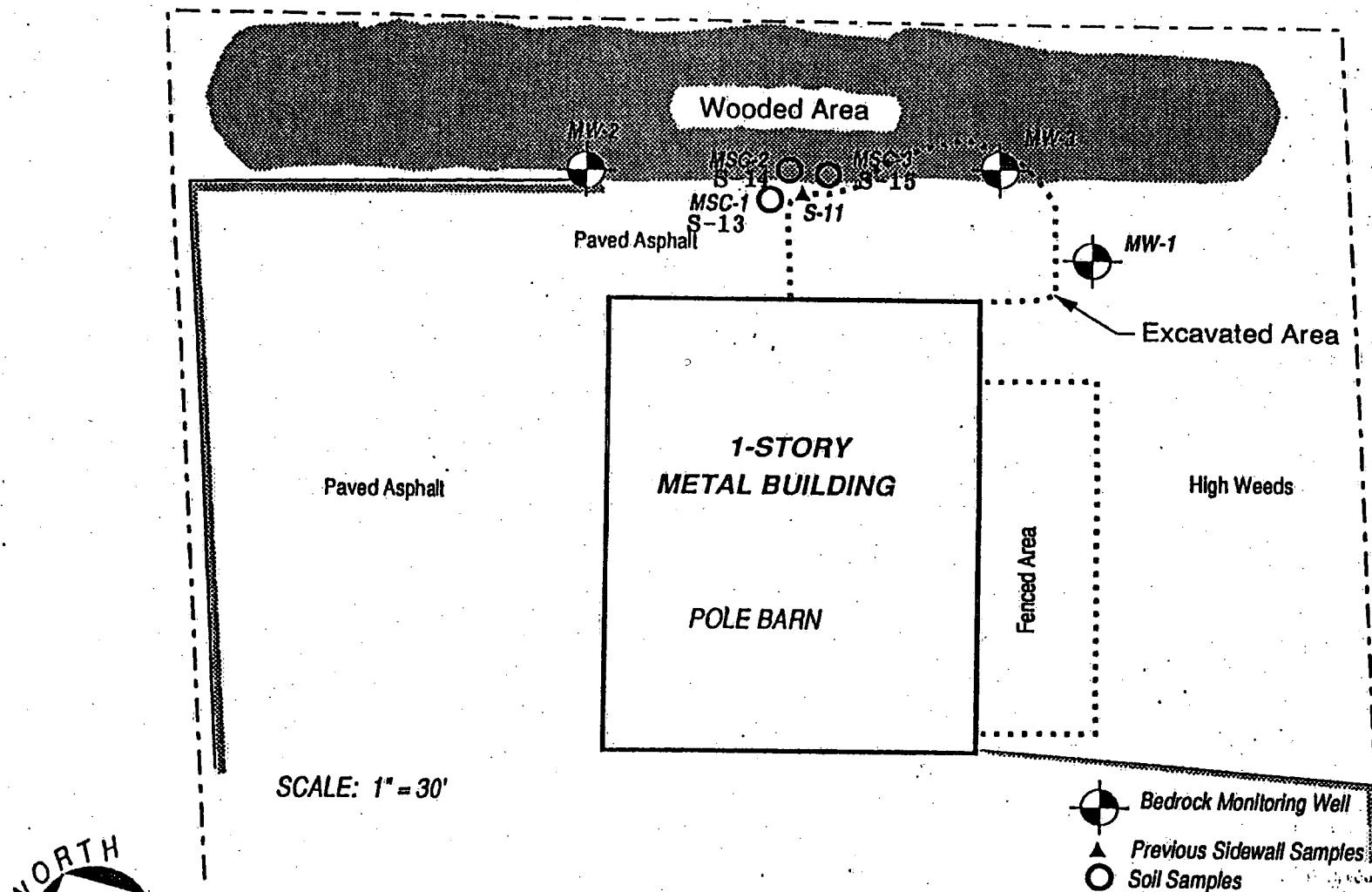
### 3.3 Well Search

LAN Associates has conducted a well search for wells within a one half mile radius of the Microwave Semiconductor Corp. (MSC) site. The results of this search indicate only ten wells within this area. The results of the well search are summarized in Table 3-4. The summary includes the well owner, location, total depth, depth of casing, static water elevation (if available), use and the source of the information. The well locations have been plotted on a 7.5 foot series USGS topographic map. The Well Location Plan is provided as Figure 3-3.

The wells within the one half mile radius included the following:

- One well at the MSC south building.
- Four monitoring wells at the William Zinsser facility at the corner of Belmont and Wyley.
- One well at the firehouse at the corner of Elizabeth and Wyley.
- Three domestic wells and one monitoring well located to the west of the MSC property. The DEP had no record of these wells. Information was obtained from the Franklin Township Health Department.

From review of the Well Location Plan, it can be seen that all of the wells within the one half mile radius of the site are located either northeast, south, southwest or west of the facility. There are no wells located northwest of the facility in the downgradient direction. Further review of the well search data indicates no wells are present in the northwest direction between the site and the Raritan River located approximately 1 mile from the site. Therefore, the volatile organics detected in the groundwater on the MSC site do not present a concern to existing wells in the area.



**MONITORING WELL AND SOIL SAMPLE LOCATION PLAN**  
**MICROWAVE SEMICONDUCTOR CORP.; NORTH BUILDING**  
 Somerset, New Jersey

Figure 2-1

Date: 3/6/91  
 LAN Job #2.3177.1  
**LAN ASSOCIATES**  
 engineering • planning • architecture  
 882 GOFFLE ROAD, HAWTHORNE, N.J. 07608  
 201-423-0350

Fig 8 of 16



SCALE: 1" = 30'

Flow Direction  
Northwest

Paved Asphalt

Paved Asphalt

1-STORY  
METAL BUILDING

POLE BARN

High Weeds

Excavated Area

Fenced Area

Wooded Area

MW-2

58.32'

MSC-2

MSC-1

S-11

MSC-3

MW-3

62.82'

MW-1

64'



Bedrock Monitoring Well



Previous Sidewall Samples



Proposed Samples

12/5/90

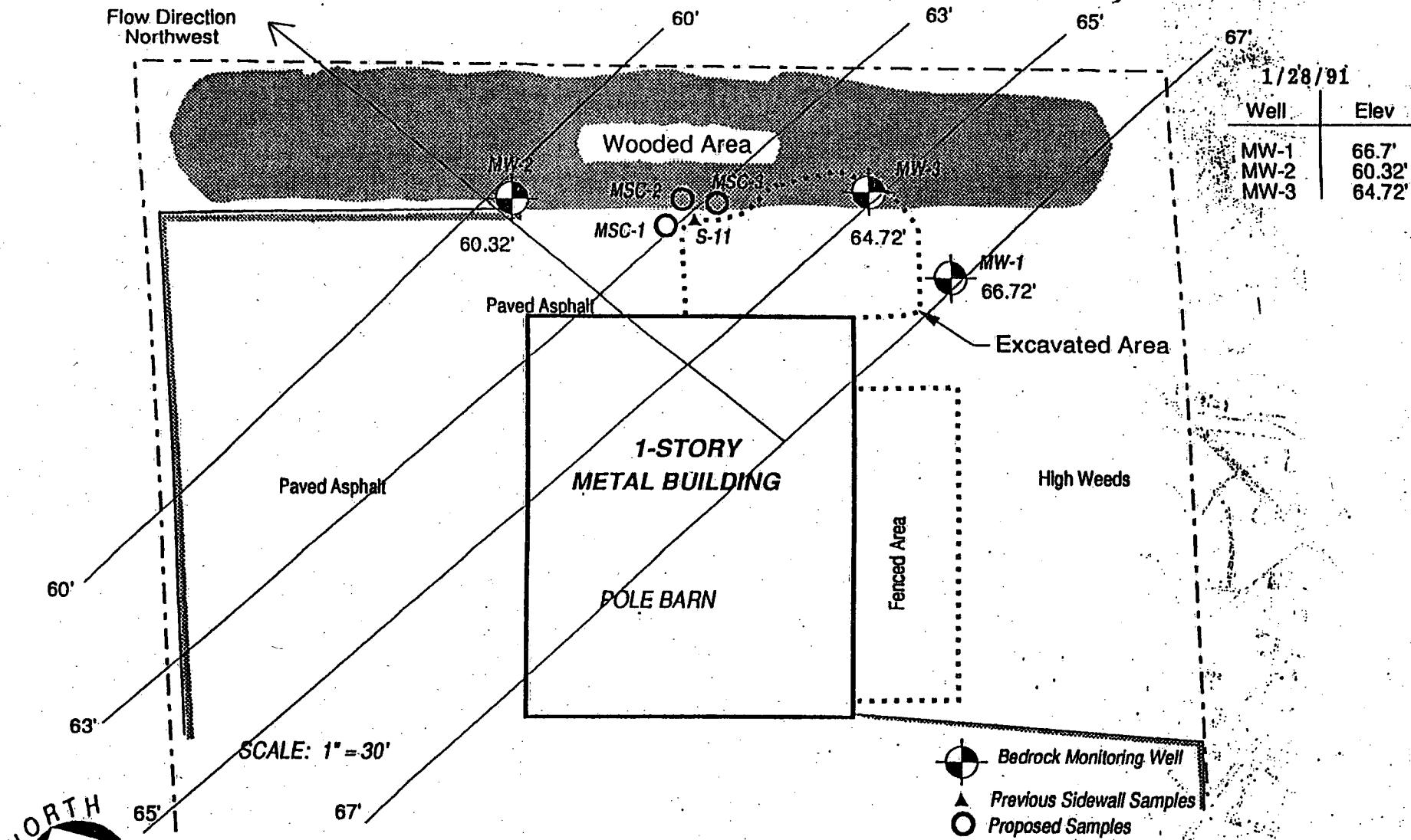
Well	Elev
MW-1	64'
MW-2	58.32'
MW-3	62.82'

Groundwater Contour Map - 12/5/90MICROWAVE SEMICONDUCTOR CORP.; NORTH BUILDING  
Somerset, New Jersey

Figure 3-1

Date: 12/5/90  
 LAN Job #2:3177.1  
**LAN ASSOCIATES**  
 engineering • planning • architecture  
 662 GOFFLE ROAD, HAWTHORNE, N.J. 07506  
 201-423-0360

Per 9 of 16



1/28/91

Well	Elev
MW-1	66.7'
MW-2	60.32'
MW-3	64.72'

**Groundwater Contour Map - 1/28/91**  
**MICROWAVE SEMICONDUCTOR CORP.; NORTH BUILDING**  
 Somerset, New Jersey

Figure 3-2

Date: 1/28/91  
 LAN Job #2.3177.1  
**LAN ASSOCIATES**  
 engineering • planning • architecture  
 682 GOFFLE ROAD, HAWTHORNE, N.J. 07506  
 201-423-0350

Re 10 of 16

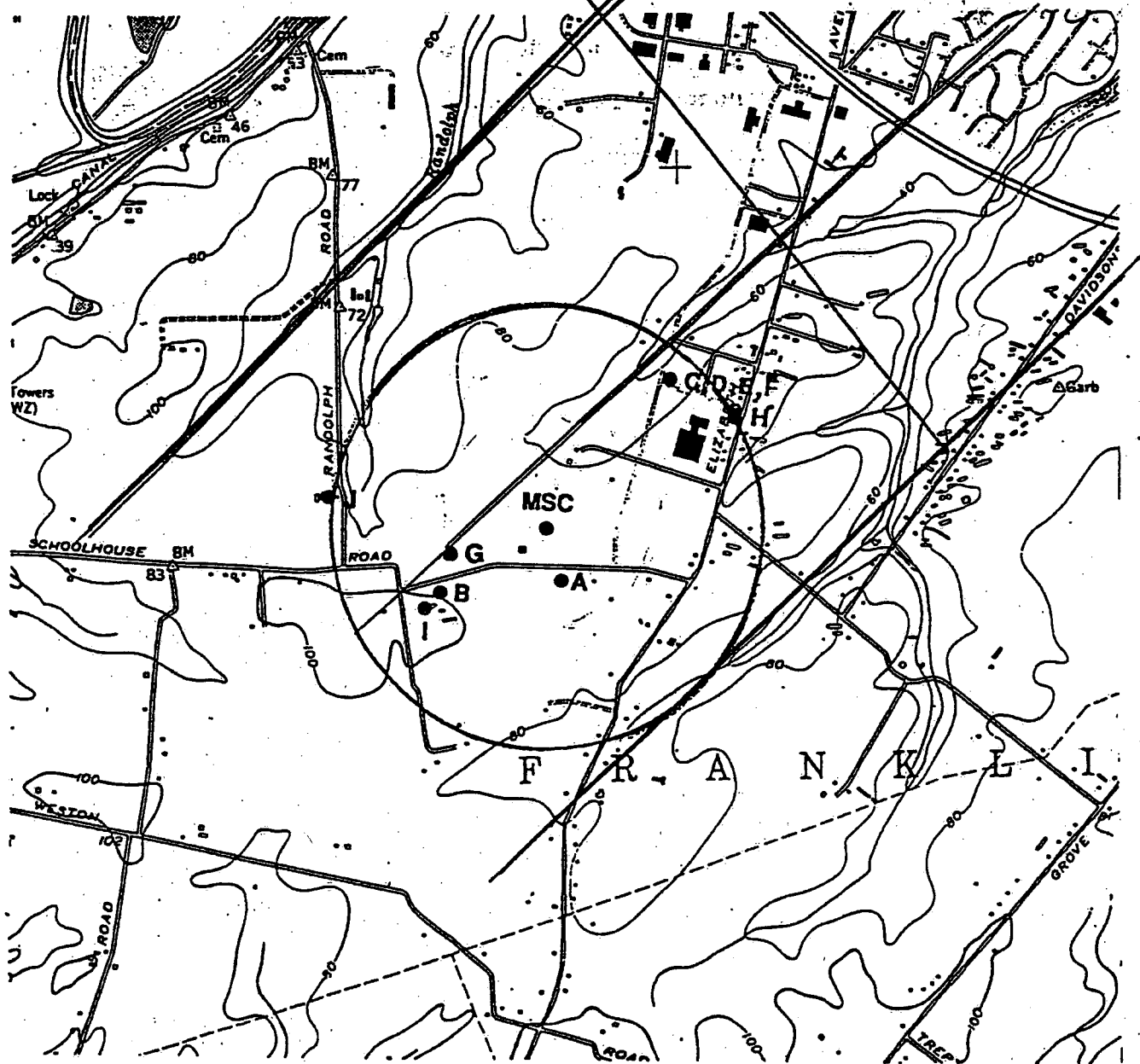


USGS 7.5' Series Map

Groundwater Flow  
Direction as Evidenced  
by the Valley Trends

REF 1  
Pg 11 of 16

BOUND BROOK QUADRANGLE



Scale: 1" = 2000'

Well Locations Within One Half Mile Radius

Microwave Semiconductor Corp.  
Somerset, New Jersey

Figure 3-3

Date: November 6, 1990

LAN Job #2.3177.1

LAN ASSOCIATES

engineering • planning • architecture  
662 GOFFLE ROAD, HAWTHORNE, N.J. 07506  
201-423-0350

Table 3-1

## Summary of Soil Sample Analytical Results

Microwave, Semiconductor Corp.

Somerset, N.J.

Sample Location	<u>S-13</u>	<u>S-14</u>	<u>S-15</u>
Sample I.D.	MSC #1	MSC #2	MSC #3
Date Collected	11/9/90	11/9/90	11/9/90
Sample Depth	18"-24"	18"-24"	18"-24"
Volatile Organics (ppb)	ND	ND	ND
Tentatively Identified Compounds (ppb)	ND	ND	ND

Table 3-2

## Summary of Groundwater Sample Analytical Results Analysis

Microwave Semiconductor, Inc.

Somerset, NJ 08850

<u>Parameter</u>	<u>MW-1</u>	<u>MW-2</u>	<u>MW-3</u>	<u>ECRA Guidelines</u>
Date Sampled	12/5/90	12/5/90	12/5/90	
Base Neutrals (ug/l)				
Bis(2-ethylhexyl)phthalate	ND	1.5 J	ND	
Diethyl Phthalate	ND	ND	1.6 J	
Dimethyl Phthalate	1.6 J	ND	ND	
Totals	1.6 J	1.5 J	1.6 J	50
Tentatively Identified Compounds (ug/l)				
Unknown Amide	17 J	ND	8.0 J	
C-2 Benzene	5 J	ND	ND	
Methanol	ND	ND	ND	
Ethanol	ND	ND	ND	
Methyl Ethyl Ketone	ND	ND	ND	
4-Methyl-2-pentanone	ND	ND	ND	
Cyanide	ND	ND	ND	200
Total Dissolved Solids (mg/l)	270	270	340	
pH	7.8	7.9	7.9	

<u>Parameter</u>	<u>MW-1</u>	<u>MW-2</u>	<u>MW-3</u>	<u>ECRA Guidelines</u>
Metals (mg/l)				
Antimony	ND	ND	ND	
Arsenic	ND	ND	ND	.050
Beryllium	ND	ND	ND	
Cadmium	ND	ND	ND	0.10
Chromium	ND	ND	.015	.050
Copper	ND	.013	.018	1.000
Lead	ND	ND	.0069	0.050
Mercury	ND	ND	ND	0.002
Nickel	ND	ND	ND	
Selenium	ND	ND	ND	0.010
Silver	ND	ND	ND	0.050
Thallium	ND	ND	ND	
Zinc	0.033	.041	.050	5.000

Note:

ND = Not Detected

Parameter	MW-1		MW-2		MW-3		ECRA Guidelines
Date Sampled	12/5/90	1/28/91	12/5/90	1/28/90	12/5/90	1/28/91	
Volatile Organics (ug/l)							
Methylene Chloride	1.3 JB	ND	13 JB	ND	3.8 JB	1.1 J	
1,1-Dichloroethene	ND	ND	140	47	ND	1.1 J	
1,1-Dichloroethane	ND	2.3 J	22 J	7.6 J	ND	8.5	
1,1,1-Trichloroethane	3.0 J	4.5 J	680	190	3.9 J	15	
Trichloroethene	6.5	5.1	ND	ND	1.2 J	1.5 J	
Total	10.8	11.9	855	244.6	8.9	27.2	10
Tentatively Identified Compounds (ug/l)							
Acetone	ND	19 JB	ND	59. JB	ND	11 JB	

Notes:

- B = Compound also detected in the blank  
 ND = Not Detected  
 J = Result is detected below the reporting limit or is an estimated concentration

RP:ms/(3177.1) Table 3-2

Table 3-3

## Groundwater and Elevation Data

Microwave Semiconductor Corp.

Somerset, N.J.

Date: 12/5/90

<u>Monitoring Well #</u>	<u>Top of * Casing</u>	<u>Depth to Groundwater (ft)</u>	<u>Groundwater* Elevation (ft)</u>	<u>Floating Layers</u>	<u>Reading (ppm)</u>
MW-1	85.3'	21.3'	64.0'	None	None
MW-2	83.82'	25.5'	58.32'	None	None
MW-3	84.22'	21.4'	62.82'	None	None

Date: 1/28/91

<u>Monitoring Well #</u>	<u>Top of * Casing</u>	<u>Depth to Groundwater (ft)</u>	<u>Groundwater* Elevation (ft)</u>	<u>Sheen or Floating Layers</u>	<u>Tip Reading (ppm)</u>
MW-1	85.3'	18.6'	66.7'	None	39.5
MW-2	83.82'	23.5'	60.32'	None	32.3
MW-3	84.22'	19.5'	64.72'	None	4.6

- \* Elevations are relative to an on-site datum. The wells are scheduled to be surveyed by a licensed surveyor.

Table 3-4  
One Half Mile Well Search

ECRA Case #89560  
 Microwave Semi-Conductor Corp.  
 100 Schoolhouse Road  
 Franklin Township/Somerset County  
 USGS Bound Brook Quadrangle  
 Latitude 40° 31' 50"  
 Longitude 74° 32' 45"

	WELL OWNER	ADDRESS	TOTAL DEPTH (FEET)	LENGTH OF CASING (FEET)	STATIC WATER ELEV. (FEET BELOW SURFACE)	USE	SOURCE OF INFORMATION
A	Microwave Semiconductor Corp.	100 Schoolhouse Road Lot 21 Block 514	350	70	45	Industrial/ Domestic	MSC
B	Mario Di Cello	Schoolhouse Road	160	52	60	Domestic	Somerville Well Drilling Co.
C	William Zinsser & Co.	39 Belmont Drive	42	20	NA	Monitoring	Moretrench American Corp.
D	William Zinsser & Co.	39 Belmont Drive	45	18	NA	Monitoring	Moretrench American Corp.
E	William Zinsser & Co.	39 Belmont Drive	45	16	NA	Monitoring	Moretrench American Corp.
F	William Zinsser & Co.	39 Belmont Drive	38	16	NA	Monitoring	Moretrench American Corp.
G	Mr. Murray Sanders	27 Schoolhouse Road	NA	NA	12	Monitoring	Rutgers Enviro. Sciences Inc.
H	Voc. Fire	Lot No. 101, 103 Block 525	200	50	30	Domestic	Plainfield Well Drilling
I	Norman R. Fischer	21 Schoolhouse Road	NA	NA	NA	Domestic	Franklin Twp. Health Dept.
J	No Record	Randolph Rd. Block 5 Lot 3	92	NA	NA	Domestic	Franklin Twp. Health Dept.

NA - Information Not Available



**REFERENCE 2**

EGRA SAMPLING PLAN

Microwave Semiconductor Corp.  
North Building  
100 School House Road  
Somerset, New Jersey

EGRA Case #89560

Submitted to:

Division of Waste Management  
Bureau of Environmental Evaluation &  
Cleanup Responsibility Assessment  
401 East State Street  
Trenton, NJ 08625

Attn: Mr. Mark R. Souders,  
Case Manager

LAN Job #2.3177.1

Date: September 25, 1990

**LAN**

LAN ASSOCIATES

ENGINEERING ■ PLANNING ■ ARCHITECTURE  
662 GOFFLE ROAD, HAWTHORNE, N.J. 07506-3499

201-423-0350

FAX ■ 201-423-5175

## 1.0 Introduction:

This ECRA Sampling PLAN is submitted in response to the DEP review letter dated June 25, 1990 relative to the "at-peril" sampling and cleanup report dated May 2, 1990 and the DEP comments relative to the July 26, 1990 ECRA Sampling Plan. The "at-peril" cleanup involved excavation and disposal of contamination below the asphalted area to the north of the pole barn at the Microwave Semiconductor facility, Somerset, New Jersey. This area was previously used for waste chemical storage. A spill of J-100, a proprietary solvent mixture, occurred in 1983. The spilled material drained off the asphalt pad onto the soil to the north and northeast. Soil was excavated from this area in 1983. Post excavation samples were collected on February 3, 1989 by Enviro-Sciences, Inc. personnel to document the effectiveness of the cleanup. The details of the cleanup have been submitted as part of ECRA Case 88B-51. This area was also inspected by Carol Lynn Heck of DEP.

During the months of August and September 1989, Metcalf and Eddy Technologies Inc. personnel performed additional investigations in this area for the purchaser of the property, SGS-Thomson Microelectronics Inc. The results of the investigation revealed that residual contamination remained off or near the paved area. Additional sampling was performed to determine the extent of contamination present and to determine if additional remediation was required. The compounds detected included 1,1,1 Trichloroethane, Tetrachloroethylene, 1,1-Dichloroethane and Dichlorobenzene.

Following the delineation sampling and analysis, the asphalt pavement and soils in this area of contamination were excavated for off-site disposal as a hazardous waste. Post excavation samples were collected from both the base and sidewalls of the excavated area to verify the effectiveness of the cleanup. The Sampling and Cleanup Report provided a narrative summary covering the work completed and all supporting documentation required to facilitate ECRA review of the "at-peril" cleanup.

Two of the final post excavation samples associated with the "at-peril" cleanup indicated the presence of volatile organic compounds at levels slightly above the ECRA Guidelines (B-5, S-11). Because of this, the DEP has requested that a well search be conducted and a groundwater and soil sampling plan be submitted to delineate the extent of volatile organic compounds. In

addition, the horizontal extent of Acetone contamination at sample location S-11 is also to be delineated.

In addition to implementing the sampling as described in Section 8.0 of this plan, Microwave Semiconductor Corporation will conduct and submit a well search of all wells located within a one-half mile radius of the facility, including all industrial, municipal, production, domestic and monitoring wells. Included in the well search will be well specifications (if available) and a map depicting all well locations in relation to the site. Sources to be contacted will include the NJDEP Bureau of Water Allocation and the local and county Health Departments.

A compressed red-shaley loam exists at a depth of approximately 7' below grade. This precludes the use of traditional groundwater monitoring. However, this sampling plan provides a means for investigating the groundwater quality in the vicinity of the asphalt pad. Groundwater sampling in the consolidated zone will investigate the potential for further vertical migration of volatile organic compounds (1,1,1-Trichloroethane, 1,1-Dichloroethane and Acetone). The plan also provides a means for investigating the horizontal extent of Acetone contamination at location S-11.

## 2.0 Site Location:

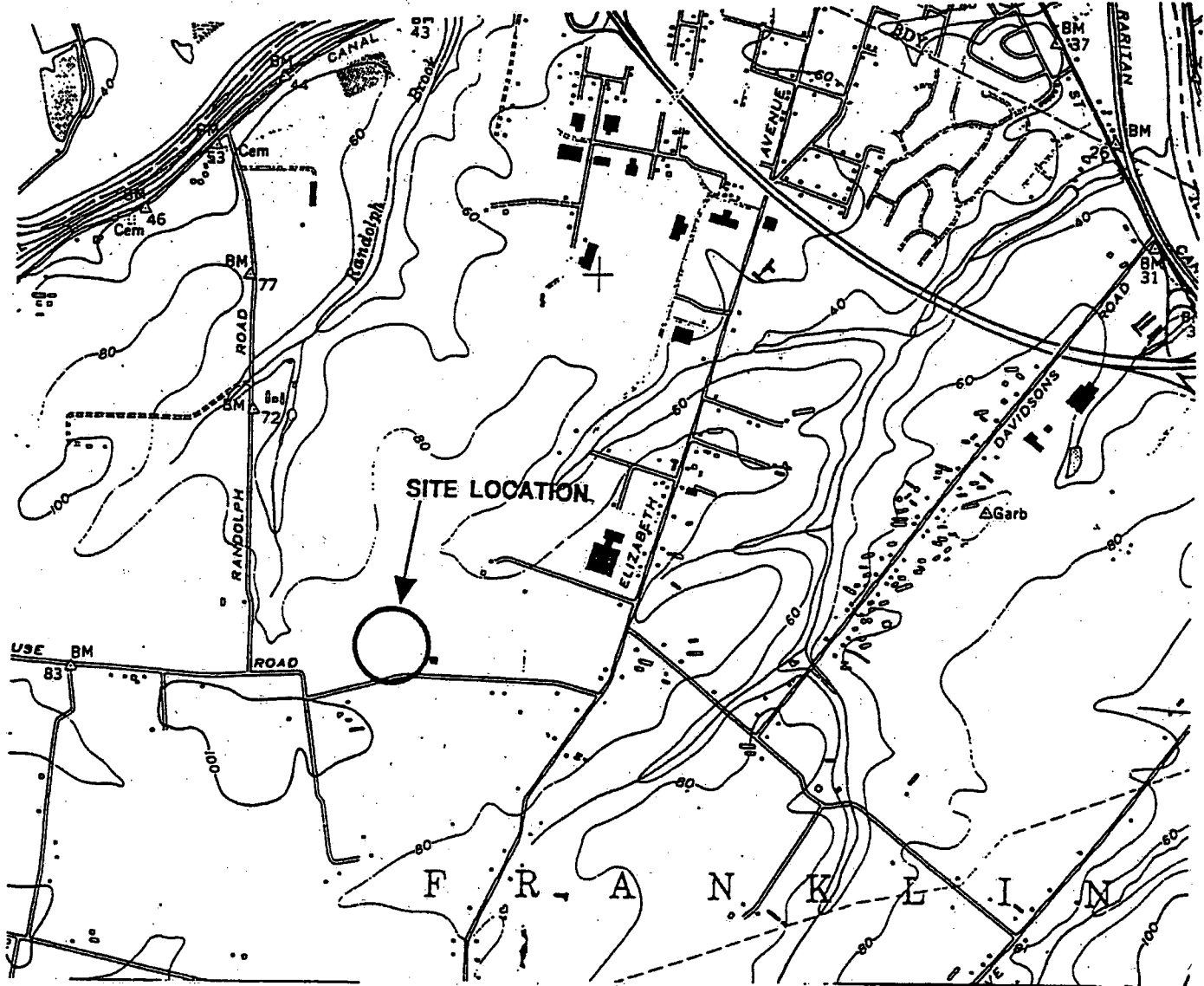
Microwave Semiconductor Corp. is located at 100 School House Road in Somerset, New Jersey. The subject facility is identified as the North Building and is located on the north side of School House Road. The overall site is 3.042 acres in size. A Site Location Map prepared from the USGS Bound Brook Quadrangle Map is provided as Figure 2-1. A Site Plan is provided as Figure 2-2. The ground elevation is approximately 90 feet above mean sea level. The facility is located within an office/industrial park.

## 3.0 Surrounding Land Use:

The topography in the vicinity of the Microwave Semiconductor building is relatively flat. The area was previously vacant wooded land and has been developed for the use of light industry, warehousing and distribution centers. The area to the northeast of the building remains undeveloped. The building is immediately bordered on all four sides by light industry/distribution centers.

USGS 7.5' Series Map

BOUND BROOK Quadrangle

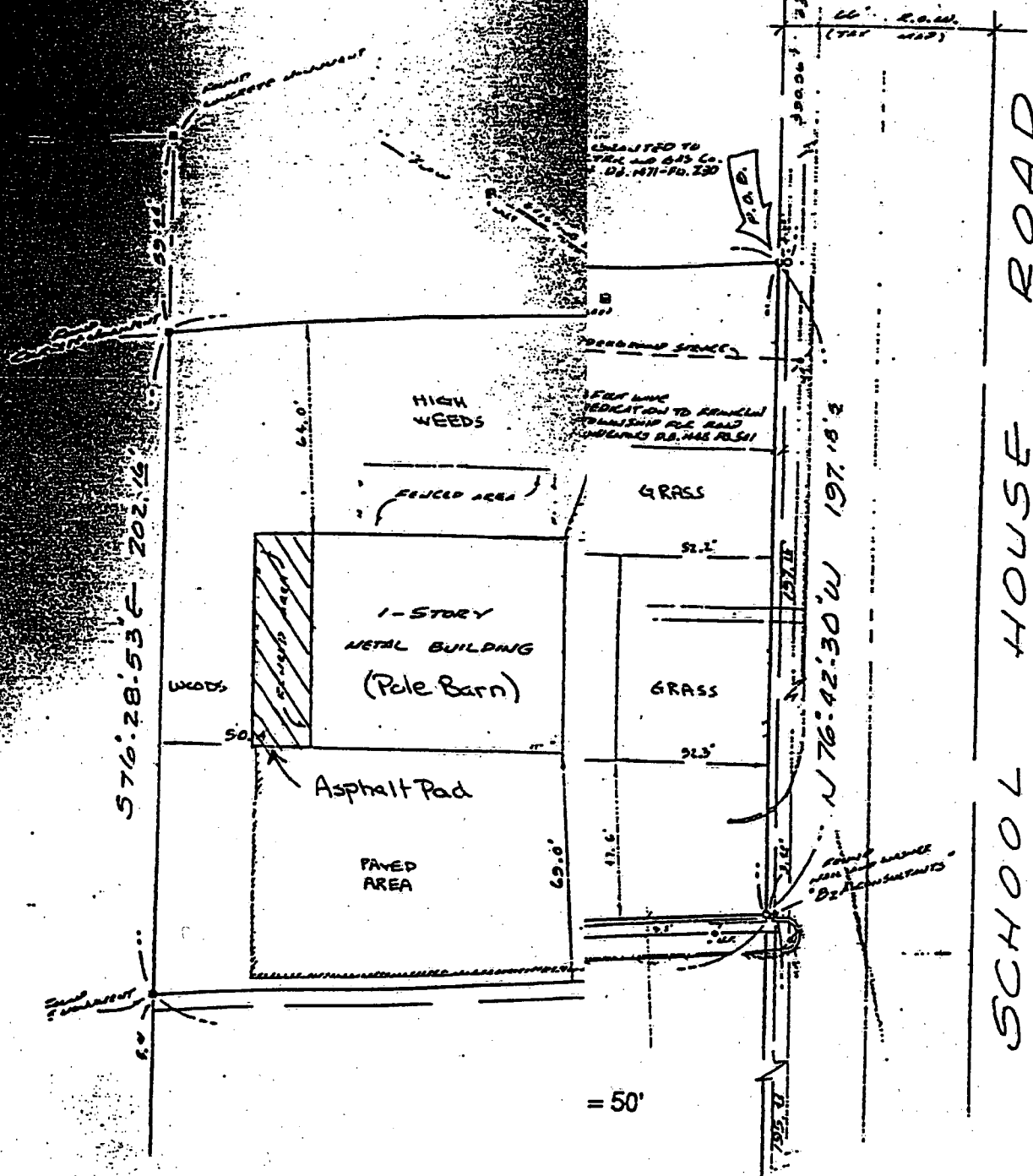


Scale 1"=2000'

**SITE LOCATION MAP**  
**MICROWAVE SEMICONDUCTOR CORPORATION**  
Somerset, New Jersey

Figure 2-1

Date: 4/27/90  
LAN Job #2.3177.1  
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Adapted from survey prepared by Paulus, Sokolo  
and Sartor Consulting Engineers

Date: 9/26/89  
LAN Job #2.3177.1

**LAN ASSOCIATES**  
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201-423-0350

The area both north and south of the Microwave facility consists of undeveloped land as well as the light industrial and warehouse use. The area west of the facility also consists of the light industrial/warehouse use for a distance of approximately 1/2 mile. There are single family residential homes beyond the 1/2 mile distance. Mixed with the average density housing are farming and rural areas. In the east direction, there is a single family house located approximately 1/10 of a mile from the site on the south side of School House Road. The single family housing use continues along the south side of School House Road. The use along the north side remains light industrial/warehousing.

#### 4.0 Operations:

Microwave Semiconductor Corporation has operated at the North Building location since 1977. Since that time, the facility has been utilized for the production of semiconductors made of gallium arsenide, silicon and metal. Recently, the production of gallium arsenide semiconductors has been phased out at this location. Much of the equipment has either been sold or moved to another location in buildings owned on the south side of School House Road.

The specifics of the prior operations have been discussed in submittals under ECRA Case No's 88B-51 and 89-560. Since the building has been vacated, these operations are not discussed further in this Sampling Plan. The wastes generated by the operations included solvents and acids. These wastes were stored in drum quantities on the asphalt pad located north of the pole barn. We have been advised that presently, SGS Thompson manages their waste in an alternate area.

#### 5.0 Drainage:

The impervious site coverage is approximately 75% so a majority of precipitation is drained off site to the northeast and northwest. The building roofs cover approximately 25% of the site area. Asphalt driveways and parking areas cover an additional 50% of the site area. The remaining property consists of the landscaped area to the south and east of the main building and the weeds and wooded area to the east and north of the pole barn. Figure 2-2 is a Site Plan showing the areas indicated above.



~~the weeds and wooded area to the east and north of the pole barn.~~ Figure 2-2 is a Site Plan showing the areas indicated above.

No stormwater runoff is generated by the south end of the property. This is a grass lawn area between the MSC building and School House Road. The elevation of the floor slab of the building is approximately 2' below the School House Road elevation.

The paved area to the west of the building is sloped both to the north and to the west, away from the building and School House Road. Run-off is received by a drainage swale along the western edge of the pavement which flows to the north. The edge of pavement elevation is approximately 2' lower than the adjacent property to the west. Run-off from the property to the west also drains to this swale. This area eventually drains to an asphalted drainage channel which runs in a northwesterly direction on the property located to the west of the site. This drainage channel ends at a headwall and the storm sewer piping directs the water to a large off-site detention pond located northeast of the site.

The asphalt paved area to the west of the pole barn drains to the north and west perimeters of this area. The large asphalt paved area between the building and pole barn drains in an easterly direction to a single catch basin which discharges to the east. The elevation along the eastern property line then drops off several feet. There is a stormwater system which runs in a northerly direction along the eastern property boundary. This water then flows to the large detention area located to the northeast of the site. The outfall from the detention area then flows in a northeast direction from the detention pond.

#### 6.0 Soils:

Soil samples obtained at Microwave Semiconductor (MCS) indicate that the soils are predominantly well drained to moderately well drained, vary in texture within the profile and have been formed from red shales and siltstones. A variable quantity of locally obtained fill material was observed overlying the native soils. Thus, the fill material did not differ substantially from the native soil, except the clayey and shaley (scraped subsoil) layer over the more permeable native topsoil.

The USDS-Soil Conservation Service has mapped Somerset County and has designated the soils along the broad undulating flatridge where the MSC facility is located as Norton Loam and Landsdowne Silt Loam. These soils are associated with red Brunswick shale. These soils are common in the rolling piedmont areas of central New Jersey and had been extensively utilized for agriculture before site development.

All soils encountered during excavation of the contaminated soil were generally homogeneous. Additionally, an improved drainage system, extensive grading, pushing, filling, and mixing of the native topsoil before and/or at the time of construction of the MSC facility have generally improved soil drainage, making the soils more homogeneous. Each soil profile consisted of a loamy A (topsoil) horizon, however those samples outside the paved area had considerably more organic staining than the samples from beneath the asphalt. An argillic B (clay accumulation) horizon of moderate depth was observed throughout the excavation. Stoniness increased with depth until fractured shales predominated halting further excavation at approximately 7'. The compressed red-shaley loam encountered at depth was very resilient and has the effect of perching water rather than allowing deep percolation.

#### 7.0 Area of Environmental Concern:

The Microwave Semiconductor Corporation facility has been subject to two ECRA cases, No's 88 B-51 and 89-560 The site has also been inspected on several occasions by DEP personnel. These ECRA cases and inspections have not identified any areas of environmental concern other than the previous waste storage area located to the north of the pole barn.

The waste area north of the pole barn consists of two general areas of environmental concern, the asphalt pad itself and the soil area to the north and northeast of the asphalt pad. The soil area has been subject to cleanup and confirmational sampling. This cleanup has been reviewed and approved by DEP. The cleanup of this area did not address the potential for spilled solvent wastes to enter the soil below the asphalt pad. This potential arises due to the presence of cracks and holes in the asphalt surface. Therefore, the soil below the asphalt pad remained as an area of environmental concern and was addressed by the "at-peril" cleanup and sampling.

#### 7.1 Asphalt & Soil Removal:

The "at-peril" Cleanup Plan developed to remediate the contaminated asphalt pad and underlying soil called for the excavation and disposal of approximately 45 cubic yards of asphalt and subbase and approximately 65 cubic yards of soil.

Prior to excavation, the asphalt and soil found to be contaminated was sampled and analyzed to obtain approval for disposal at an acceptable facility. Composite samples were collected on December 12 and 13, 1989. The composite samples were collected separately for the asphalt and the soil. Each sample was composited from five locations within the area of concern. Each sample represented no more than 20 cubic yards.

The samples were submitted to Southeastern Environmental Laboratories, Inc. for a variety of analysis. The extensive list of analytical parameters was required to complete the waste profile sheets for several disposal facilities. Analysis included several physical tests, corrosivity, Ignitability, EP Toxicity, Priority Pollutants + 40, and TCLP organics.

Chemical Waste Conversion of Hatfield, PA a subsidiary of Stout Environmental, was selected as the disposal facility. A copy of the Stout Environmental Waste Characterization Reports and Southeastern Environmental Laboratories report were provided as Appendix D of the May 2, 1990 "at-peril" sampling and cleanup report.

The excavation was performed between March 5 and March 8, 1990. A Kobelco 905 backhoe was used to perform the excavation. The asphalt was removed first and stockpiled on 6 mil plastic. The soil and asphalt were stockpiled separately and covered to await disposal. The excavation was monitored using a Photovac TIP and additional soil was removed from areas where volatile compounds were detected. The excavation area was approximately 650 ft<sup>2</sup> with depths ranging from 1' to 5.5'. The final volume of asphalt and soil removed was 30 and 120 cubic yards, respectively. Figure 7-1 is a drawing showing the dimensions and depths of the excavation. The Uniform Hazardous Waste Manifests were included as Appendix E of the May 2, 1990 "at-peril" sampling and cleanup report.

## 7.2 Post Excavation Sampling:

Post excavation samples were collected to demonstrate the horizontal and vertical effectiveness of the cleanup. Six horizontal delineation samples were collected, two each on the north and

WOODED AREA

ASPHALTED  
SURFACE

1'

4'

5.5'

3'

3'

4.5'

TALL WEEDS

POLE BARN BUILDING

DRUM  
STORAGE  
AREA

KEY

4'

Excavation Depth

SCALE 1"=10'



INITIAL SOIL EXCAVATION

March 5 - 8, 1990

DATE: 4/27/90  
LAN Job # 2.3177.1  
LAN ASSOCIATES  
engineering • planning • architecture  
662 GOFFLE ROAD, HAWTHORNE, N.J. 07506  
201-423-0350

Figure 7-1

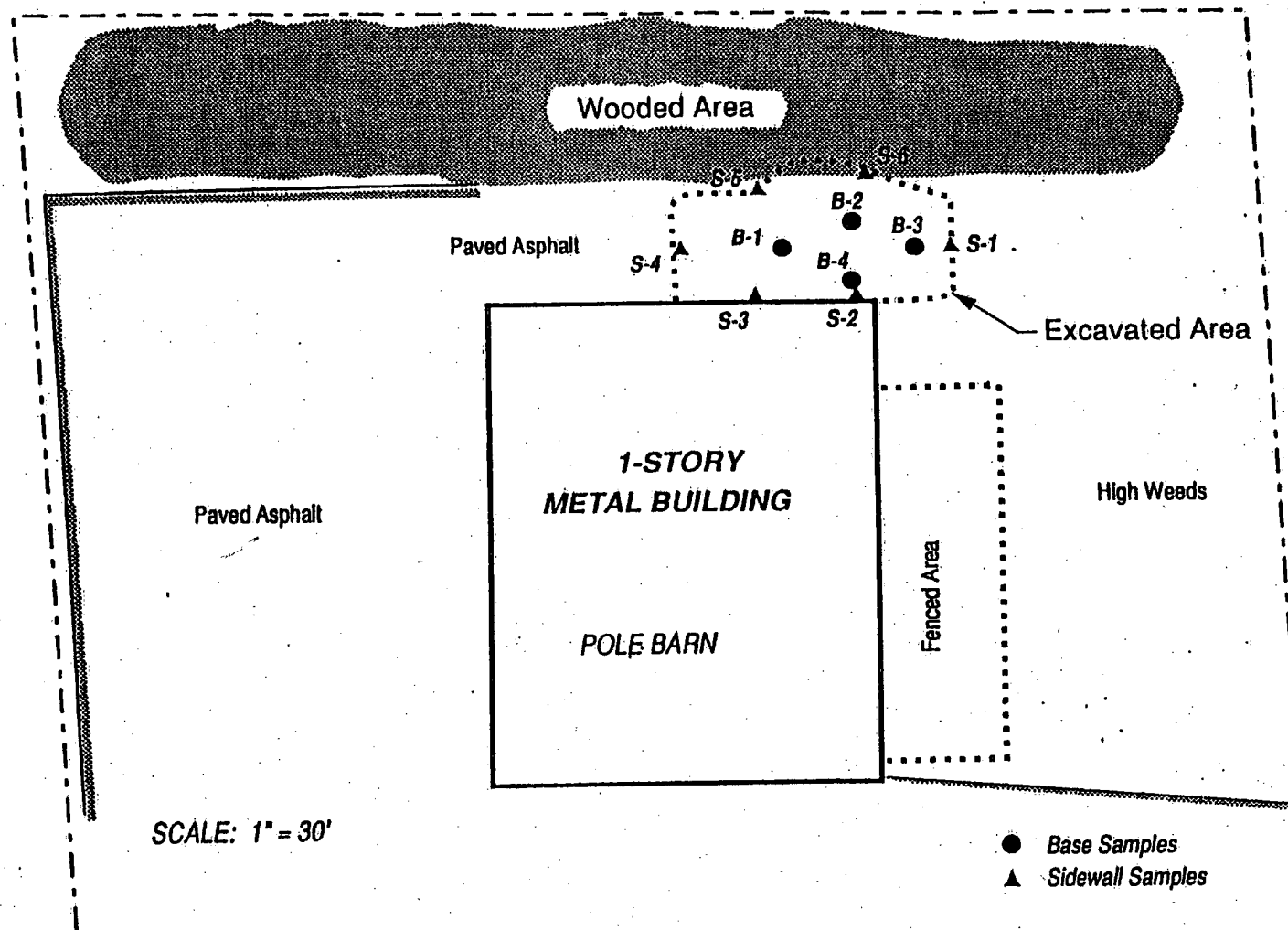
south sides of the excavation and one each on the east and west sides. The samples were collected from a depth of 0" - 6" within 1' of the excavation. Four vertical delineation samples were collected from 0" - 6" below the base of the excavation. Figure 7-2 displays the location of the post excavation samples. Samples were collected following DEP protocols. Strict chain-of-custody procedures were followed and samples were sent to Enseco Inc. of Somerset, New Jersey for Volatile Organics + 15 analysis.

### 7.3 Post Excavation Sampling Results:

Results of the post excavation sampling are summarized in Table 7-1. The complete Enseco report including all ECRA Tier II Deliverables was included as Appendix I, Volume 2 of 3 of the May 2, 1990 "at-peril" sampling and cleanup report. The analytical results indicated that elevated levels of contaminants remained in the areas of samples S-4, S-5, S-6 and B-1. Lesser concentrations of contaminants were found in samples B-3, S-2, and S-3. The total VOC concentrations for samples S-2 and S-3 were 5.12 ppm and 2.25 ppm respectively. The samples are located beneath the pole barn building. Additional excavation in this area would undermine the pole barn foundation and slab. Due to this location and the relatively minor concentrations which do not present an environmental or health threat, no further actions are proposed for this area. Acetone was the primary contaminant found in B-2, 5.5 ppm. This is the only location where Acetone was detected. Since it was used as a cleaning solution, its presence is related to the field procedures. The locations of samples B-1, B-3 and S-4, S-5 and S-6 were investigated to determine the extent of the contamination remaining in those areas.

### 7.4 Delineation of Remaining VOC Contamination:

The VOC contamination which was detected in the post excavation samples B-1, B-3, S-4, S-5 and S-6 was delineated through the collection of 6 additional soil samples. The samples were collected on April 10, 1990 and submitted to Enseco Inc. for Volatile Organics + 15 analysis. Figure 7-3 displays the sample locations. Results of the additional delineation sampling are presented in Table 7-2. The Enseco Inc. Laboratory report was included as Appendix G of the May 2, 1990 "at-peril" sampling and cleanup report. Because these samples were utilized for screening purposes to determine the amount of additional excavation required, a complete Tier II

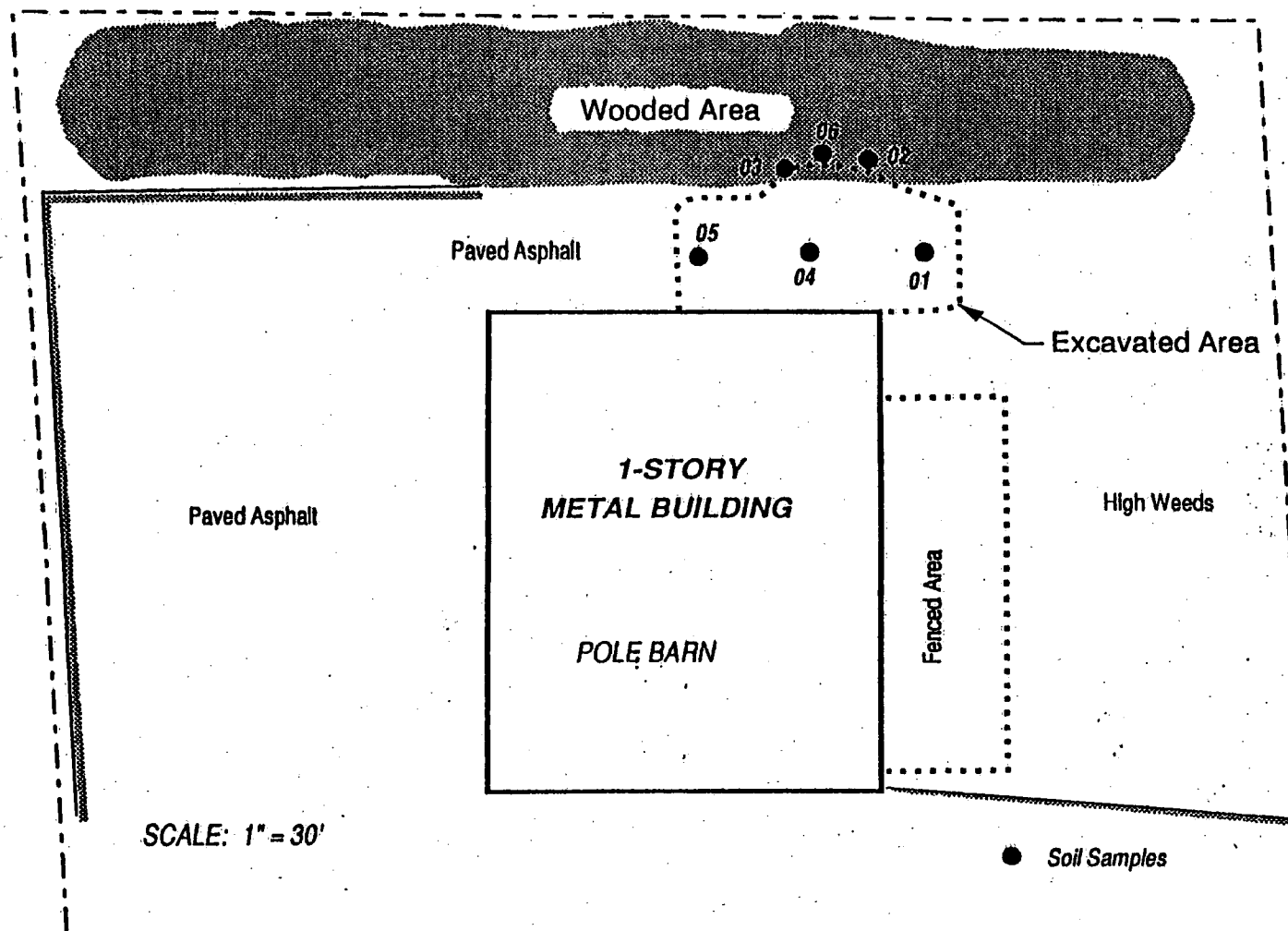


**POST EXCAVATION SOIL SAMPLING LOCATION PLAN**  
**MICROWAVE SEMICONDUCTOR CORP.; NORTH BUILDING**  
 Somerset, New Jersey

Figure 7-2

Date: 4/12/89  
 LAN Job #2.3177.1  
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Fig 12 of 20



SCALE: 1" = 30'

**ADDITIONAL DELINEATION SOIL SAMPLING LOCATION PLAN**

**MICROWAVE SEMICONDUCTOR CORP.; NORTH BUILDING**

Somerset, New Jersey

Figure 7-3

Date: 4/12/89

LAN Job #2.3177.1

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201-423-0350

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**Post Excavation Sampling Results**  
**Samples Collected March 8, 1990**

Sample ID	Concentration (ppb)											
	S - 1	S - 2	S - 3	S - 4	S - 5	S - 6	B - 1	B - 2	B - 3	B - 4	Trip Blank	Field Blank
<b>Detected Compounds</b>												
Chloroethane	ND	ND	ND	ND	3300	ND	ND	ND	ND	ND	ND	ND
Methylene Chloride	ND	ND	ND	ND	ND	ND	ND	180	840	ND	ND	7.6
1,1 Dichloroethane	ND	220	650	140	910	ND	ND	ND	3200	ND	ND	ND
1,2 Dichloroethane	ND	ND	ND	120	2100	ND	ND	ND	ND	ND	ND	ND
1,1,1 Trichloroethane	ND	800	1600	110000	1900	ND	7200	ND	160	ND	ND	ND
1,1,2 Trichloroethane	ND	ND	ND	ND	ND	ND	190	ND	ND	ND	ND	ND
Trichloroethene	ND	ND	ND	1100	ND	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	ND	ND	ND	44000	2400	89000	29000	220	ND	ND	ND	ND
Toluene	ND	ND	ND	4600	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	ND	ND	ND	190	ND	ND	ND	ND	ND	ND	ND	ND
<b>TIC's</b>												
Acetone	ND	ND	ND	ND	ND	ND	ND	5500	ND	ND	6.1	ND
1,1,2 Trichloro-												
1,2,2, Trifluoroethane	ND	4100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylenes (total)	ND	ND	ND	920	ND	ND	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	ND	ND	ND	660	ND	700	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	ND	ND	ND	2800	ND	7900	3400	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	ND	ND	ND	62000	ND	400000	14000	920	ND	ND	ND	ND
C-4 Benzene	ND	ND	ND	ND	ND	ND	14200	ND	ND	ND	ND	ND
1,2,3,4 Tetrahydro-												
Naphthalene	ND	ND	ND	ND	ND	ND	4700	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	ND	ND	ND	ND	ND	ND	37000	ND	ND	ND	ND	ND
Azulene	ND	ND	ND	ND	ND	ND	4400	ND	ND	ND	ND	ND
1-Methylnaphthalene	ND	ND	ND	ND	ND	ND	3300	ND	ND	ND	ND	ND
Unknown TIC's	ND	ND	ND	ND	ND	ND	37400	ND	960	ND	ND	ND
<b>TOTAL VOC</b>	ND	5120	2250	226960	10610	497600	154790	6820	5160	ND	6.1	7.6

Ref 2  
Pg 14 of 91



Table 7-2

**Delineation Sampling Results**  
**Samples Collected April 19, 1990**

Sample ID	<u>Concentration (ppb)</u>						Trip Blank	Field Blank
	1	2	3	4	5	6		
<b>Detected Compounds</b>								
1,2 Dichloroethane	2200	ND	ND	ND	ND	ND	ND	ND
1,1,1 Trichloroethane	820	ND	ND	ND	ND	ND	ND	ND
Tetrachloroethene	ND	650	740	ND	ND	ND	ND	ND
<b>TIC's</b>								
Acetone	2400	ND	ND	750	ND	ND	ND	ND
1,2-Dichlorobenzene	ND	410	ND	ND	ND	ND	ND	ND
<b>TOTAL VOC</b>	5420	1060	740	750	ND	ND	ND	ND

report was not requested. These results indicated that the excavation and disposal of an additional 45 cubic yards of soil would be necessary to remediate the area.

#### 7.5 Additional Soil Excavation:

The excavation of additional soil was performed on April 19, 1990. A Photovac Tip was used to screen the excavation area for volatile compounds. The soil was excavated down to the shale depth, approximately 7' below the original grade. The excavation depth could not be advanced any further. The excavation area was approximately 800 ft<sup>2</sup>. A drawing showing the dimensions and depths of the excavation is presented in Figure 7-4. The Uniform Hazardous Waste Manifests were included in Appendix E of the May 2, 1990 "at-peril" sampling and cleanup report.

#### 7.6 Final Post Excavation Samples:

A total of 10 additional post excavation samples were collected to document the completed cleanup. Six samples were collected from the excavation sidewalls and four samples were collected from the base of the excavation. Figure 7-5 shows the location of the post excavation samples. Samples were collected according to DEP protocols. Strict chain-of-custody procedures were followed and samples were sent to Enseco Inc. of Somerset, New Jersey for Volatile Organics + 15 analysis.

#### 7.7 Final Post Excavation Sampling Results:

The results of the final post excavation samples are summarized in Table 7-3. The complete laboratory data package was included in Appendix J, Volume 3 of 3 of the May 2, 1990 "at-peril" sampling and cleanup report .

With the exception of Sample B-5, all results were below ECRA Action Levels. Sample S-7, S-8, S-10, S-11, S-12 and B-6 were below detection limits for the compounds of concern. Acetone was detected in several of the samples. The Acetone concentration at sample location S-11 was 7.9 ppm. However, this compound was utilized for cleaning the sampling equipment and is related to the field procedure.

WOODED AREA

6.5'

7'

ASPHALTED  
SURFACE

4'

7'

3'

7'

TALL WEEDS

POLE BARN BUILDING

DRUM  
STORAGE  
AREA

KEY

4' Excavation Depth

SCALE 1"=10'



ADDITIONAL SOIL EXCAVATION

April 19, 1990

DATE: 4/27/90

LAN Job # 2.3177.1

LAN ASSOCIATES, INC.

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201-423-0350

Figure 7-4

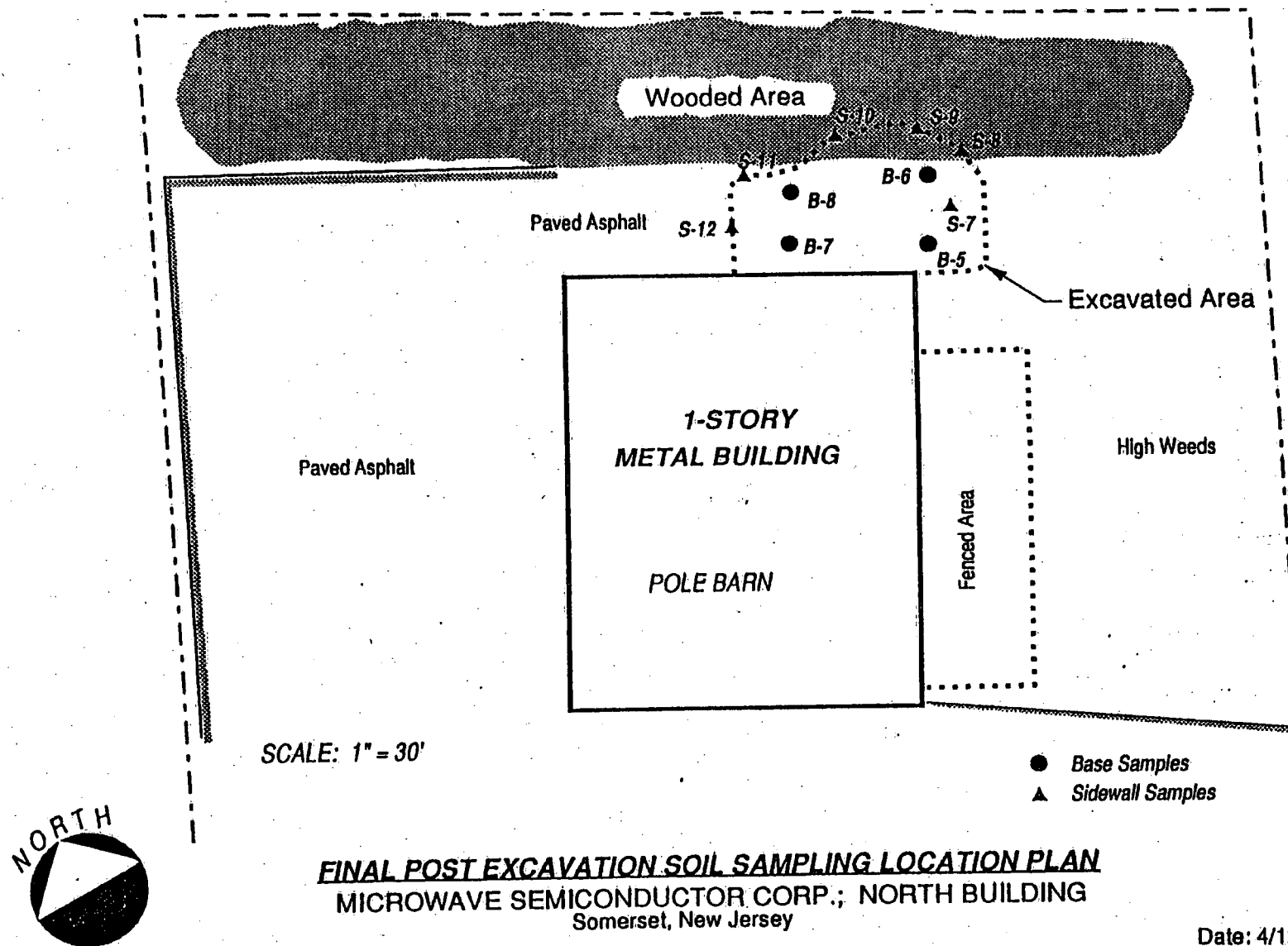


Figure 7-5

Date: 4/12/89  
 LAN Job #2.3177.1  
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 201-423-0350

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Table 7-3

# Final Post Excavation Sampling Results

Samples Collected April 19, 1990

Sample ID	Concentration (ppb)											
	S - 7	S - 8	S - 9	S - 10	S - 11	S - 12	B - 5	B - 6	B - 7	B - 8	Trip Blank	Field Blank
Detected Compounds												
1,1 Dichloroethane	ND	ND	ND	ND	ND	ND	1300	ND	ND	ND	ND	ND
1,1,1 Trichloroethane	ND	ND	ND	ND	ND	ND	7900	ND	ND	740	ND	ND
TIC's												
Acetone	ND	790	ND	ND	7900	ND	2800	ND	ND	1200	ND	ND
1,2 Dichlorobenzene	ND	ND	260	ND	ND	ND	ND	ND	340	ND	ND	ND
TOTAL VOC	ND	790	260	ND	7900	ND	12000	ND	340	1940	ND	ND

Net 2  
Pg 19 of 20

Samples S-9 and B-7 contain residual amounts of 1,2-Dichlorobenzene with values of .26 ppm and .34 ppm respectively. These values are below the ECRA Action Level of 1.0 ppm for total volatiles.

Sample B-8 contained 1,1,1-Trichloroethane at .74 ppm, also below the ECRA Action Level.

Sample B-5 contained 7.9 ppm 1,1,1-Trichloroethane and 1.3 ppm 1,1-Dichloroethane. This sample was located on the surface of the shale layer. Therefore, additional soil excavation is not possible. Additionally, the results of the adjacent post excavation samples were below the ECRA Action Levels indicating that this is an isolated location. The ECRA Action Level of 1 ppm for total volatiles is used as a guideline. It does not take into account the different toxicities of the individual compounds. The DEP has divided the compounds included in the total volatile organic analysis into two classes, carcinogens (NJDEP Group A) and non -carcinogens (NJDEP Group B). The ECRA Action Level of 1 ppm for soils is solely a guideline and assumes a worst case situation where all of the volatile compounds present are included in Group A. The NJDEP Group B is further divided into Group B-1, compounds for which no State or Federal maximum contaminant level exists, and NJDEP Group B-2, compounds for which a State or Federal maximum contaminant level exists. The 1,1,1-Trichloroethane is of relatively low toxicity compared to the other volatile compounds, particularly the Tetrachloroethane and 1,2-Dichlorobenzene which were previously present. For comparison purposes, the DEP has issued groundwater limits for Group A compounds at 5 ppb, Group A and B-1 compounds combined at 50 ppb and Group B-2 compounds, specifically, 1,1,1-Trichlorethane, at 200 ppb. A similar ratio of limits is proposed for the soil limits (1:1, 5:1 and 40:1) or 1 ppm for total carcinogenic volatiles, 5 ppm for total carcinogenic and non-carcinogenic compounds for which maximum contaminant levels have not been set, and 40 ppm for 1,1,1-Trichloroethane. The proposed groundwater limits shall be those indicated above.

Since a total of approximately 200 cubic yards of material was removed, the excavation depth was extended to the shale level, location B-5 is the only location remaining which exceeds the ECRA Action Levels and the compounds present are of low toxicity and are below the limits proposed above, the cleanup was considered complete. However, the DEP has required that additional exploration be performed relative to the horizontal extent of Acetone contamination at sample location S-11 and the potential for volatile organic groundwater contamination in the asphalt pad vicinity. This Sampling Plan has been prepared to address these two areas.

**REFERENCE 3**

REF 3  
Pg 1 of 5



1205 INDUSTRIAL HIGHWAY • P.O. BOX 514 • SOUTHAMPTON, PA 18966-0514 • (215) 355-3900

August 5, 1992

SGS Thompson  
211 Commerce Drive  
Montgomeryville, PA 18936  
Attn: Harry Wister

Dear Harry,

As per our conversation of today, any positive results will be noted in the sample result column. If there is no value present please refer to the MDL column for the sample result.

If you should have any questions, please feel free to contact me at (215) 355-3900.

Sincerely,

A handwritten signature in black ink, appearing to read 'Daniel DePrezis', written over a large, stylized flourish.

Daniel DePrezis  
GC/MS Supervisor





REF 3  
PG 2 OF 5

1205 INDUSTRIAL HIGHWAY • P.O. BOX 514 • SOUTHAMPTON, PA 18966-0514 • (215) 355-3900

DWR-198      New Jersey Department of Environmental Protection  
4/89      Division of Water Resources-Bureau of Safe Drinking Water  
            CN 029, Trenton, New Jersey 08625-0029

QC DATA FOR HAZARDOUS CONTAMINANT ANALYSIS

\_\_\_\_\_ Public Water System ID Number

NJDEP Lab ID # 77166      Lab Name QC Inc.

Public Water System Name SGS Thompson Microelectronics

LABORATORY SAMPLE ID: 556031

Contaminant	Analytical Method	MDL ug/l	SAMPLE RESULTS
Trichloroethylene	502.2	0.5	
Tetrachloroethylene	502.2	0.5	
Carbon Tetrachloride	502.2	0.5	
1,1,1-Trichloroethane	502.2	0.5	
1,2-Dichloroethane	502.2	0.5	
Vinyl Chloride	502.2	0.5	
Methylene Chloride	502.2	0.5	
Benzene	502.2	0.5	
Chlorobenzene	502.2	0.5	
1,2-Dichlorobenzene	502.2	0.5	
1,3-Dichlorobenzene	502.2	0.5	
1,4-Dichlorobenzene	502.2	0.5	
1,2,4-Trichlorobenzene	502.2	0.5	
1,1-Dichloroethylene	502.2	0.5	
Trans-1,2-Dichloroethylene	502.2	0.5	
Total Xylenes	502.2	0.5	
cis-1,2-Dichloroethylene	502.2	0.5	



REF. 3  
Pg 3 of 5

1205 INDUSTRIAL HIGHWAY • P.O. BOX 514 • SOUTHAMPTON, PA 18966-0514 • (215) 355-3900

DWR-198  
4/89

New Jersey Department of Environmental Protection  
Division of Water Resources-Bureau of Safe Drinking Water  
CN 029, Trenton, New Jersey 08625-0029

QC DATA FOR HAZARDOUS CONTAMINANT ANALYSIS

Public Water System ID Number

NJDEP Lab ID # 77166 Lab Name QC Inc.

Public Water System Name SGS Thompson Microelectronics

LABORATORY SAMPLE ID: 556032

Contaminant	Analytical Method	MDL ug/l	SAMPLE RESULTS
Trichloroethylene	502.2	0.5	
Tetrachloroethylene	502.2	0.5	
Carbon Tetrachloride	502.2	0.5	
1,1,1-Trichloroethane	502.2	0.5	
1,2-Dichloroethane	502.2	0.5	
Vinyl Chloride	502.2	0.5	
Methylene Chloride	502.2	0.5	
Benzene	502.2	0.5	
Chlorobenzene	502.2	0.5	
1,2-Dichlorobenzene	502.2	0.5	
1,3-Dichlorobenzene	502.2	0.5	
1,4-Dichlorobenzene	502.2	0.5	
1,2,4-Trichlorobenzene	502.2	0.5	
1,1-Dichloroethylene	502.2	0.5	
Trans-1,2-Dichloroethylene	502.2	0.5	
Total Xylenes	502.2	0.5	
cis-1,2-Dichloroethylene	502.2	0.5	



REF- 3  
Pg. 4 of 5

1205 INDUSTRIAL HIGHWAY • P.O. BOX 514 • SOUTHAMPTON, PA 18966-0514 • (215) 355-3900

DWR-198 New Jersey Department of Environmental Protection  
4/89 Division of Water Resources-Bureau of Safe Drinking Water  
CN 029, Trenton, New Jersey 08625-0029

QC DATA FOR HAZARDOUS CONTAMINANT ANALYSIS

Public Water System ID Number

NJDEP Lab ID # 77166 Lab Name QC Inc.

Public Water System Name SGS Thompson Microelectronics

LABORATORY SAMPLE ID: 556033

Contaminant	Analytical Method	MDL ug/l	SAMPLE RESULTS
Trichloroethylene	502.2	0.5	
Tetrachloroethylene	502.2	0.5	
Carbon Tetrachloride	502.2	0.5	
1,1,1-Trichloroethane	502.2	0.5	
1,2-Dichloroethane	502.2	0.5	
Vinyl Chloride	502.2	0.5	
Methylene Chloride	502.2	0.5	
Benzene	502.2	0.5	
Chlorobenzene	502.2	0.5	
1,2-Dichlorobenzene	502.2	0.5	
1,3-Dichlorobenzene	502.2	0.5	
1,4-Dichlorobenzene	502.2	0.5	
1,2,4-Trichlorobenzene	502.2	0.5	
1,1-Dichloroethylene	502.2	0.5	
Trans-1,2-Dichloroethylene	502.2	0.5	
Total Xylenes	502.2	0.5	
cis-1,2-Dichloroethylene	502.2	0.5	

DWR-198  
4/89

New Jersey Department of Environmental Protection  
Division of Water Resources-Bureau of Safe Drinking Water  
CN 029, Trenton, New Jersey 08625-0029

REF. 3  
Pg 5 of 5

QC DATA FOR HAZARDOUS CONTAMINANT ANALYSIS

NJDEP Lab ID # 77166 Lab Name QC Inc.

Public Water System Name SGS Thompson Microelectronics

LABORATORY SAMPLE ID: 556031

Contaminant	Analytical Method	MDL ug/l	SAMPLE RESULTS
Aroclor 1016	608	0.17	ND
Aroclor 1221	608	0.10	ND
Aroclor 1232	608	0.27	ND
Aroclor 1242	608	0.33	ND
Aroclor 1248	608	0.35	ND
Aroclor 1254	608	0.07	ND
Aroclor 1260	608	0.07	ND
Chlordane	608	0.23	ND

LABORATORY SAMPLE ID: 556032

Contaminant	Analytical Method	MDL ug/l	SAMPLE RESULTS
Aroclor 1016	608	0.17	ND
Aroclor 1221	608	0.10	ND
Aroclor 1232	608	0.27	ND
Aroclor 1242	608	0.33	ND
Aroclor 1248	608	0.35	ND
Aroclor 1254	608	0.07	ND
Aroclor 1260	608	0.07	ND
Chlordane	608	0.23	ND

**REFERENCE 4**

## RECORD OF TELEPHONE CONVERSATION

REF 4  
Pg 1 of 1DATE 8/10/92TO Mark Souders, NJDEPE  
NAME/FILE NO.FROM Dorothea DornCLIENT/PROJECT ARCS IISUBJECT SGS - SiemensCHARGE: DEPT. NO. 759 CLIENT SYMBOL EPA OFS NO. \_\_\_\_\_

DISCUSSION WITH Mark Souders of the NJDEPE. Mark is the Case Manager for the Siemens facility. The groundwater has been contaminated at the site with halogenated hydrocarbons, TCA, dichlorobenzene, etc. The deep well at 300' is not contaminated. The well at 45' has TCA in it and the shallower well has even higher parts of TCA in it. There have been many reports done on this site. ECRA # 89560 has been assigned to the facility. A written request to Ken Smith will be needed prior to viewing files or copying. They work closely w/ BOST (Bureau of underground storage tanks). He did not know anything about T-100 & Stripper spill.

NJDEPE

401 E. STATE ST OPEN: 7:30 a.m.

Trenton, NJ

Fax # 609-777-4285

CC:

BY Dorothea Dorn  
NAMEGeologist  
TITLE759  
DEPT. NO.

**REFERENCE 5**

BULLETIN 50

GEOLOGIC SERIES

# THE GEOLOGY OF NEW JERSEY

September 11, 1940



DEPARTMENT OF  
CONSERVATION AND DEVELOPMENT  
STATE OF NEW JERSEY

CHARLES P. WILBER, Director and Chief of the Division of  
Forests and Parks

MEREDITH E. JOHNSON, Chief of the Division of Geology  
and Topography

Trenton, N. J.

1940

PRINTED IN THE U. S. A.  
BY THE JERSEY PRINTING COMPANY  
BAYONNE, N. J.

Ref 5  
Pg 1 of 2



## SEDIMENTARY ROCK.

*Structural relations.*—The Trias rests unconformably upon the early Paleozoic and the pre-Cambrian crystalline rocks along the southeastern margin of the Highlands. The sedimentary members are composed in part at least of material furnished by the erosion of the Devonian and older Paleozoic formations which formerly covered the Highlands as well as of the crystallines themselves. Hence they are considerably younger than the youngest of their constituent materials. They are in part overlapped by beds of Cretaceous age, which rest upon their beveled edges. Hence a very considerable period of erosion separates them from the next overlying formation. The structure is chiefly monoclinel, the strata being inclined at low angles toward the northwest, but locally broad shallow folds have been developed. The beds are broken by many nearly vertical faults, the amount of dislocation varying from a few inches to several thousand feet.

The sedimentary rocks are sparingly fossiliferous, footprints of reptiles, a few species of fish, a small crustacean, and a few remains of land plants being the chief elements. The formation is generally considered to be of late Triassic age, and by some the upper parts are regarded as Jurassic; hence the name *Jura-Trias*, by which the Newark group as a whole is often called. On the basis of lithologic character the strata in New Jersey have been divided into three parts, as follows:

*Stockton formation (Trs).*—The Stockton beds at the base of the Newark group in New Jersey consist of light-colored arkosic sandstone and conglomerate with interbedded red sandstone and shale. The thickness is estimated at 2,300 to 3,100 feet. (See "Sandstone," p. 187). The material of which they are composed was derived chiefly from the disintegration of crystalline rocks and came from the southeast. Well-rounded quartz pebbles an inch or more in diameter are not uncommon at some horizons.

*Locketong formation (Trl).*—The Locketong beds overlie the Stockton and consist of black shale, hard, massive, dark argillite, flagstone, and, in a few places, very impure thin limestone layers. The formation has an estimated thickness of 3,500 feet. (See "Argillite," p. 187).

*Brunswick formation (Trb).*—The Brunswick beds are chiefly soft red shale with some interbedded sandstone, which becomes more abundant and, on the whole, somewhat coarser, toward the northeast. Its thickness has been estimated at 6,000 to 8,000 feet, being equal to, if not greater, than the combined thickness of the

other two divisions. Moreover, the wide areal extent, due to its thickness and repetition by faulting, makes it the most conspicuous of the Triassic formations and gives the impression that the rocks are all soft red shale, with only an occasional layer of purple, green, yellow or black shale—a contention which overlooks the Stockton and Locketong formations. The uniform presence of finely disseminated mica in the Brunswick shale as in the Stockton formation indicates that the sediments were largely derived from the disintegration of the pre-Cambrian crystalline rocks and came from the southeast.

*Border conglomerates (Tre).*—Beds of conglomerate occur at a number of localities along the northwest border adjoining the Highlands and there replace the beds of the preceding divisions. Locally well-rounded boulders a foot or more in diameter occur in these beds, which represent the fan-like accumulations formed by heavily-loaded streams of high velocities, where they debouched upon a low plain. An excellent section through the flank of one of these deposits is exposed in the bluff along the Delaware River 2 miles above Milford.

These massive conglomerates which are believed to indicate the location of Trias streams which emerged from the northwest highlands onto the inter-mountain valley; are of three somewhat diverse types;—(a) those predominantly of well-rounded quartzite and hard sandstone pebbles and boulders, (b) those predominantly of limestone fragments, many of which are sharply angular, and (c) those containing a high percentage of granite and gneiss. There is some commingling of pebbles but on the whole the different types are sharply differentiated.

The calcareous conglomerate is most extensively developed north-east of Annandale and Lebanon, and north of Suffern, N. Y. The chief exposures of gneiss conglomerates are between Montville and Pompton Plains. There are extensive areas of the quartzite conglomerate, northwest of Milford, south of Pattenburg, near Peapack and on Mount Paul.

In addition to these large areas localized along the northwest border, there are numerous areas, particularly in Bergen and Passaic counties, where lenses of conglomerate and pebble-bearing sandstone occur inter-leaved with the finer beds of the Brunswick series. Granite and gneiss pebbles in these beds are conspicuous by their absence.

The comparative absence of granitic pebbles in these border conglomerates except north of Montville and the wide extent of the

12  
P 2052

**REFERENCE 6**

## RECORD OF TELEPHONE CONVERSATION

REF 6  
Pg 1 OF 1DATE 6/16/92

Dan Van Abs

TO Wellhead Protection Program 609-633-1179  
NAME/FILE NO.FROM Kara McGuirk EbascoCLIENT/PROJECT ARS II EPI-PASUBJECT Wellhead Protection Areas in Somerset Co. (WHPAs)CHARGE: DEPT. NO. 759 CLIENT SYMBOL EPA OFS NO. \_\_\_\_\_DISCUSSION WITH Dan Van Abs

- NJ has a wellhead protection program approved by EPA.
- At this time, there are no designated WHPAs in state
- Some regs (ex/ USTs) use an arbitrary fixed radius as protection; fall back is currently 2000' from any public water supply well

## COMMENTS

BY Kara McGuirk Geologist 759  
NAME TITLE DEPT. NO.

CC:

**REFERENCE 7**

KEF 7  
Pg 1 of 15

ENVIRONMENTAL IMPACT  
ASSESSMENT  
FOR

A PROPOSED RESEARCH AND ELECTRONICS FACILITY

ADDITION TO

MICROWAVE SEMICONDUCTOR CORP.

LOT 21.01 - BLOCK 514

FRANKLIN TOWNSHIP  
SOMERSET COUNTY

100 SCHOOL HOUSE ROAD  
SOMERSET NEW JERSEY 08873

201/469-3311

Prepared by:

Lockwood Greene Engineers, Inc.

Planner/Engineers/Architects/Managers

P.O. Box 491  
Spartanburg, South Carolina 29304

803/578-2000

Project Number 85227.10  
July 12, 1985

Thomas A. Frudy, Jr.

ENVIRONMENTAL IMPACT ASSESSMENT  
ADDITION TO  
MICROWAVE SEMICONDUCTOR CORP.  
Lot 20.01 - Block 514 - Zone M-1

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A. Project Description

The construction of the proposed Research and Electronics addition to the existing Microwave Semiconductor Facility located on a 27.016 acre lot in the northeastern section of Franklin Township, Somerset County, New Jersey. Lot 20.01 Block 514 is located on School House Road. Plans for the building addition indicate the building to be connected to the east side of the existing building. (See Site Plan)

This project is to add the capability to manufacture gallium arsenide I.C. devices as well as to relocate and upgrade the existing silicon process manufacturing now taking place in the existing buildings. The existing building will be reworked to house office and engineering support, certain R and D labs and support services for the manufacturing operations.

The total facility gross area is 189,314 square feet which includes an equipment loft that is non-habital of 30,000 square feet. The present facility will accommodate 365 people. The proposed addition will increase the occupancy to 455 people. As shown on the Site Plan the proposed addition will have a set back from School House Road greater than the existing building. Side yard set back will be greater than the 40 feet required. The majority of parking exists on the west side of the existing building. Additional parking will be provided by a small parking addition consisting of 28 spaces to south the of the existing building. A new paved access drive will be provided and will enter at the northeast corner of the site and run parallel to the east property line turning west at the rear of the existing facility. This drive will provide service access to the proposed addition and provide circulation to the existing parking and service areas.



The building is configured for three different functions: manufacturing, process support or utilities and office area.

The office area will be a two story, steel framed metal clad building with windows to allow natural light and an open atmosphere desirable for that type of occupancy.

The wafer manufacturing area is a steel framed building using a deep truss to clear span the 108 foot width of the production area. The truss area will provide a floored attic or interstitial space to house air handling equipment supplying air to a plenum ceiling over the cleanrooms below. The exposed exterior walls of this area are again metal cladding to match the office area and process support area.

The manufacturing area is central and located between the office on one side and the process support area on the other side. The walls between these areas will be 2 hour masonry fire walls.

The process support area will be a single story steel frame building. Just behind but adjacent to this area as well as being adjacent to the wafer fab area will be a service yard for containing bulk gas storage and other support functions which can be or best be located outdoors.

The schedule for the project is a very aggressive "fast track" approach to have the wafer manufacturing area dried-in by the end of 1985 and the facility ready for production prior to the end of 1986.

The site is presently zoned M-1 for light manufacturing and the proposed addition is consistent with this zoning. (See Exhibit B). A residential zone is located near the site to the southwest.

Adjacent to the site on the east is a nonconforming use of property zoned M-1 which is presently used as a residence, and on the west is a vacant lot also zoned M-1.

On site existing underground utilities will require relocation as the result of the proposed addition.

The existing silicon fabrication area located in the existing building discharges acid waste into a lift station. The acid waste is then pumped to an on site neutralization system located on the north side of the building. Here the pH of the acid waste is adjusted within a range of 6.5 to 9.0.

Solvent wastes from the existing silicon process is collected at the point of generation of the process equipment. The effluent canisters are transported to a temporary staging and storage area prior to being collected by a licensed waste carrier. Solvents are segregated by classification within the staging area to insure optimum safety.

Exhaust streams from the existing MSC buildings process area are collected by ductwork from the process equipment and discharged through the roof into the atmosphere. The two basic existing exhaust systems are the acid and solvent fumes. These exhaust discharges will be relocated and combined with the proposed addition.

The owner anticipates that construction will begin upon receipt of required approvals and permits.

B. Inventory of Existing Environmental Conditions

B-1: Air and Water Quality

Air quality in the area of the site is generally considered to be good, except for possible high levels of CO associated with high traffic volumes and peak hour traffic.

The Township's water resources include both groundwater and an extensive network of surface waters in the form of rivers and streams. Furthermore, the water resources issue is regional in scope, extending beyond the Township's border.

Franklin Township is drained by two (2) primary streams, the Raritan and Millstone Rivers. The Delaware and Raritan Canal follows the boundary of the Township along the Millstone and Raritan Rivers. Numerous smaller streams subdivide the Township's two (2) primary drainage areas. Included are several major streams north of Amwell Road, and also Six Mile Run, Mile Run, and Ten Mile Run. Exhibit "C" illustrates unnamed streams located in the general vicinity of the proposed site.

The rivers of Franklin Township have been classified as FW-2 by the State of New Jersey, meaning that the waters should be useful as a drinking water supply after treatment, and for water contact sports. The Township's Master Plan, however, describes the upper sections of the Millstone River as being severely polluted by sanitary sewage treatment facilities and mining activities. The East Millstone area's water quality is described as being somewhat better, but deteriorating further downstream and in the Raritan River due to point source pollution from industry and treatment plants in the Manville-Somerville areas.

Much of the Township is non-infrastructured, dependent upon on-site resources for supply and disposal. In such areas, water quality is the major growth-limiting factor. Allowable densities should be based upon groundwater availability as well as the area required for safe operation of on-site waste treatment systems.

Design must provide for protection of groundwater in both infrastructured and non-infrastructured areas, as stormwater runoff and pavement of recharge areas can adversely impact ground and surface waters.

B-2: Water Supply

Water supply is recongized as a second major constraint on development in the Township. There are limitations on both on-site (groundwater) supplies and regional water supplies. The ability of surface waters to accept sewage effluents without water quality deterioration is an important factor in public water availability.

For the area of the proposed addition, Elizabethtown Water Company is the supplier. Public water distribution is provided by the Franklin Township Water Utility. In this general area, the northeasterly section of the Township, is supplied by two (2) connections with Elizabethtown, at Schoolhouse Road and at Weston Canal Road. At Schoolhouse Road, an existing 20" water main provides service to the site. An existing 8" connection provides water to the buildings. On site fire protection is also connected to the existing 20" main.

B-3: Soils

The predominant soils found in the area of the proposed site, as determined from mapping by the U.S.D.A. Soil Conservation Service, are of the Penn silt loam series (PmB) 2% - 6% slopes, and the Reaville silt loam series (ReB) 2% - 6% slopes. Croton silt loam (CrA) 0% - 2% slopes, is located near the site. (See Exhibit "D".)

A site-specific investigation would be needed in order to accurately delineate these soil mappings at the site and is currently being prepared.

The U.S.D.A. Soil Conservation Service, in its publication "Soil Survey of Somerset County, New Jersey", describes these soils as follows:

The Penn series consists of moderately deep, well drained soils. They were formed in material weathered from shale, siltstone and fine-grained sandstone. In unlimed areas these soils are strongly acid to slightly acid in the substratum. Natural fertility is medium and the organic-matter content is moderate. In most places the soil is easy to till. Permeability and the available water capacity are moderate. The effective rooting depth is limited by shale bedrock. Penn soils are suited to all general crops. Included in the PmB soil mapping are small areas of soils in which the surface layer and upper part of the subsoil are browner than in this soil, and contain no shale fragments. Also included are areas of Norton, Readington, Klinesville and Royce soils and small areas of eroded soils. Runoff is slow and the hazard of erosion is slight. For farming or residential development moderate erosion - control measures such as contour cultivation and minimum tillage are needed.

The Reaville series consists of moderately deep, moderately well-drained and somewhat poorly drained soils. The soils formed in material weathered from red sandstone, siltstone or shale. In unlimed areas these soils are strongly acid in the upper part and strongly to moderately acid in the substratum. Natural fertility is medium. Permeability is moderate in the surface layer and moderately slow in the subsoil. The available water capacity is moderate. Shale fragments in most locations make up 0% to 15% of the surface layer of ReB silt loams. This soil mapping also includes some areas of shaly soils, eroded soils and some small areas of slope over 6%. Also included are areas of Croton, Abbottaton and Penn soils.

Preliminary soil investigation within the proposed building area indicate the following characteristics:

- o Thin layer of topsoil, about 2 feet of sandy silt, then reddish-brown weathered shale.
- o Bedrock at 4.5 to 7.5 feet.
- o Allowable bearing on weathered shale - 6000 psf.
- o Allowable bearing on fill - 4000 psf.
- o Frost line 3'-0" down.
- o No water table encountered. Seasonal high water table over 5'-0".

B-4: Geology

Franklin township lies within the Piedmont physiographic province. Brunswick Shale predominates, although there is an area of Triassic bedrock in the southern section of the Township. These bedrocks differ in composition, although both are of shallow depth.

The planned development is located in the region of predominantly red Brunswick shale. The upper bedrock is characterized as weathered rock and easily shattered into thin flakes and plates.

The shale is overlain by a clayey-silty soil formed by the decomposition of the underlying rock, usually less than 10 feet thick. Both the upper soil and underlying rock provide good support. Ground water is usually found below construction levels.

B-5: Topography

There is a total grade differential of approximately 10 feet. The highest elevations of 102 feet above sea level are found along the western boundary sloping to the northeast and southeast bounds of the property.

B-6: Vegetation

A mix of deciduous trees, evergreens and grasses covers much of the property. Trees noted at the site include Oak, Birch, Beech and Cherry trees.

The north half of the site is developed and landscaped. The south half of the site is undeveloped.

B-7: Wildlife

Although residential, commercial and industrial development is the area is progressing, undeveloped fields and wooded areas still exist. Animals that may be expected to be found in the area include squirrels, racoons, chipmunks, rabbits, opossum and various species of birds.

B-8: Land Use

The site is located within a zone designated for light manufacturing (M-1). Areas zoned as residential are located within one-half mile. (See Exhibit B). The area is also within the Township's Planning Sector Number 4, for which a variety of land use recommendations exist, including:

- o Proposed continued industrial use for most of the sector.
- o Retaining prime agricultural resource area, in northwestern portion of section.
- o Non-expansion of existing moderate and low density areas, due to substantial non-residential development in sector.

The Township has evaluated its resources and needs with regard to accommodating growth. Franklin Township lies within the busy corridor between the New York and Philadelphia regions. Recent decades have seen neighboring townships such as Edison and Woodbridge become highly developed centers of industry and population. The Township of Franklin, too, is undergoing change. Once a semi-rural



farming area, the Township is becoming increasingly suburban in character. The forty-seven (47) square mile Township, with a population of 6,299 in 1940 has grown in population to approximately 32,900 in 1982. From 1970 to 1980, the population increase was much less than anticipated.

It appears however, that the Township is now on the verge of its greatest period of growth. Factors for growth are in place, such as sewerage, public water supply, and access to major transportation routes. Township planners see a variety of land use plans, ranging from maintenance of agricultural and open-space areas, to development of major commercial and industrial centers, as necessary in order to optimize a balance between growth and conservation.

In the site area, Schoolhouse Road has recently been upgraded and realigned for better traffic flow. Undeveloped lots with fields and trees yet remain, and there are private residences in the area as well.

The lot with which this report is concerned has been developed for light manufacturing. The owner proposes to expand this facility. The proposed addition will be compatible with the present development and the Township's planning policies. The developed portion of the lot is landscaped and has moderate to thin stand of trees.

B-9: Aesthetics and History

Included among the Township's major planning goals is the preservation of areas of beauty and of historic value. Numerous historic sites in the Township have been preserved and revitalized.

C. List of All Permits and Other Approvals Required by Municipal, County and State Law

No applications for permits have yet been submitted. This Impact Statement comprises part of the application to the Township for Site Plan Approval.

Required Approvals:

- o Approval from the Township of Franklin for Preliminary and Final Site Plan.
- o Approval from the Somerset County Planning Board for the proposed drainage program.
- o Approval from the D & R Canal Commission for the drainage program.
- o Certification and approval from the Somerset Union Soil Conservation Service for a soil erosion and sediment control plan.
- o Agreement with Public Service Electric & Gas for installation of utility service line.

- o Certificate of Occupancy from Township of Franklin to occupy building upon completion.

o Building Department - Building Permit. See 200.000  
 Building Department - Building Permit. See 200.000

#### D. Impact Assessment

D-1: Air and Water Quality

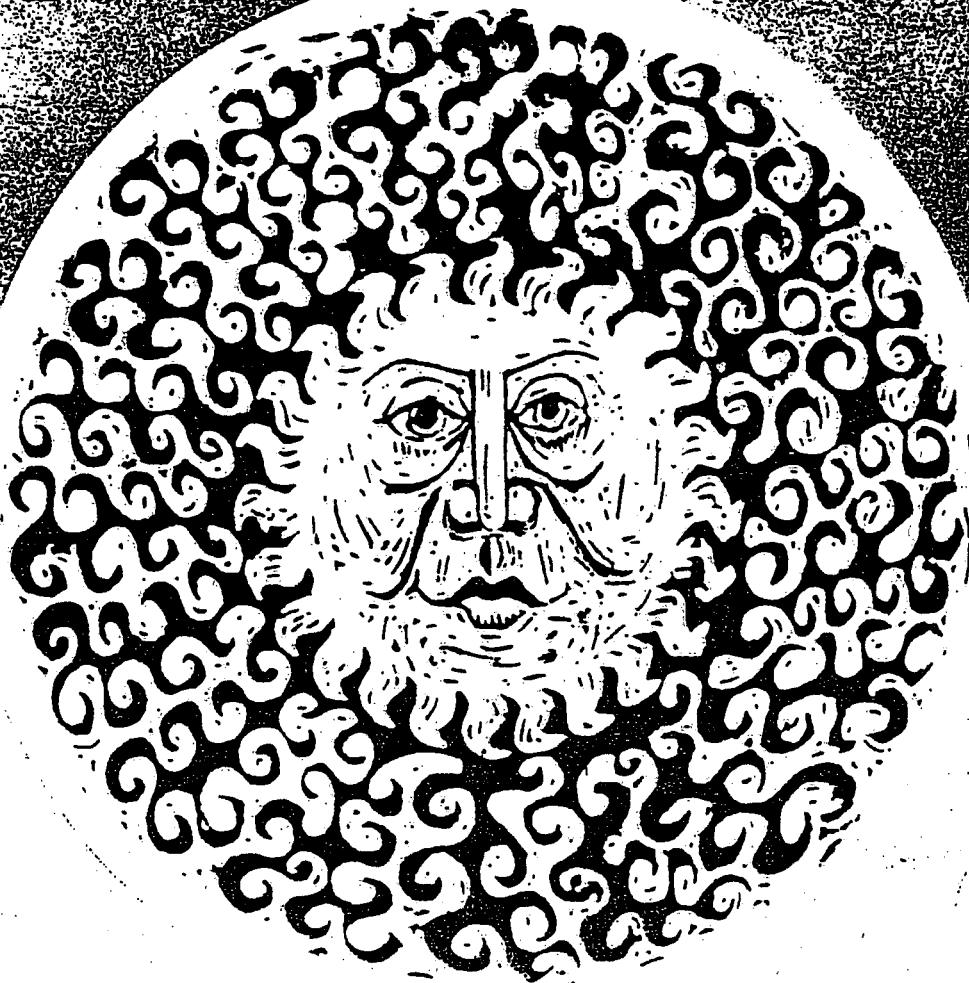
Some impact on air quality due to increased vehicular traffic is to be anticipated. Parking for 408 vehicles is planned. Factors that must be considered in assessing air quality impact include the number of vehicles and the influence of future construction in the area. A professional traffic study must be carried out if this impact is to be more clearly evaluated. Some impact will result when future expressway connector south and east of the site is implemented. See Exhibit A.

There will be four exhaust systems within the proposed facility. Two will be abatted and two non-abatted. These systems are:

1. Burn Box Exhaust System
2. Scrubbed Exhaust System
3. Unscrubbed Exhaust System
4. Cabinet Exhaust System

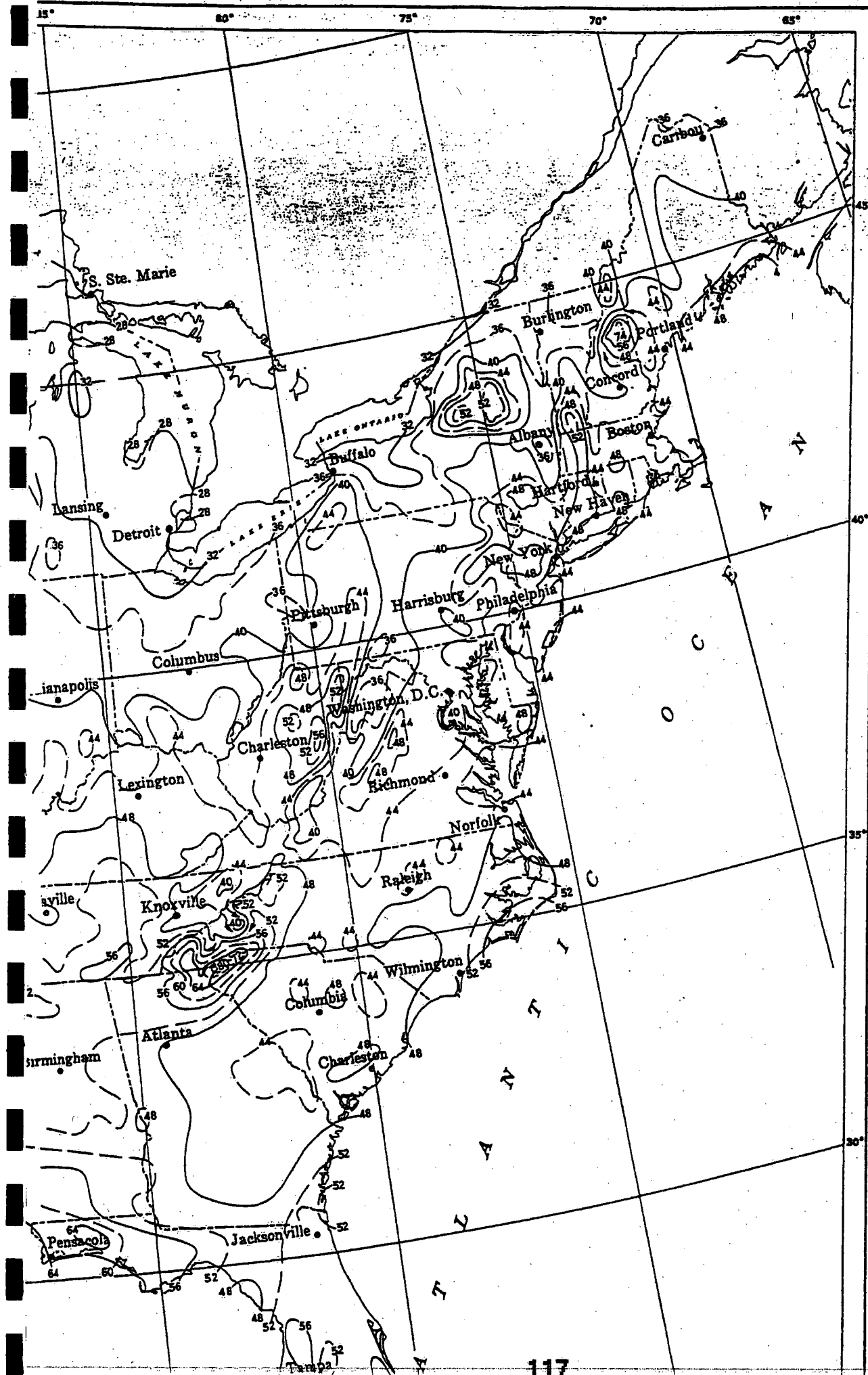
The Burn Box exhaust system will handle the exhaust from any process tool which can potentially discharge unreacted toxic or pyrophoric gases. These gases are subsequently decomposed by combustion within the Burn Box system and then the safer combustion products are discharged into the scrubbed exhaust system.

**REFERENCE 8**



# CLIMATIC ATLAS OF THE UNITED STATES

REF 8  
Pg 2 of 2



**REFERENCE 9**

## RECORD OF TELEPHONE CONVERSATION

REF 7  
Pg 1 of 1DATE 2/17/92TO Patty Elliot of Franklin Township Dept of Health 908-873-2500  
NAME/FILE NO.FROM Dorothea L. DavisCLIENT/PROJECT SBS ThomsonSUBJECT SBS ThomsonCHARGE: DEPT. NO. 759 CLIENT SYMBOL EPA OFS NO. \_\_\_\_\_DISCUSSION WITH Patty Elliot of Franklin Township Dept of Health

The DOH has an Environmental Impact Statement which was completed by the NJDEP for SBS Thomson. The company filed for an NJPDES permit in 1987. The site has monitoring wells on site as part of an ECRA (Evaluation/Environmental Clean-up Regulation Assessment). The company is supplied by both public and private well water. The company has complied with their sewage permit. This is basically a check valve on the public water main so that it can not be contaminated by the company. Extraordinary chemicals

## COMMENTS

on site are HFI, HCl, and Hydrogen. The maximum  
                   liquid      liquid  
                               gas  
 quantities for each are 660 (liquid); 2400 (liquid), 130 (gas);  
 and Hydrogen is unknown. In 1985, the company  
 proposed a Research addition to the company.

BY Dorothea L. Davis Geologist 759  
 NAME TITLE DEPT. NO.



**REFERENCE 10**

## RESULTS OF ADDITIONAL GROUNDWATER QUALITY DELINEATION

Microwave Semiconductor Corp.  
North Building  
100 School House Road  
Somerset, New Jersey

ECRA Case #89560

Submitted by:

Gilberg & Kurent  
1250 Eye Street, N.W.  
Washington, D.C. 20005

Submitted to:

Division of Waste Management  
Bureau of Environmental Evaluation &  
Cleanup Responsibility Assessment  
401 East State Street  
Trenton, NJ 08625

Attn: Mr. Mark R. Souders,  
Case Manager

Prepared by:

LAN Associates, Inc.

LAN Job #2.3177.1  
Date: August 4, 1992

# LAN

LAN ASSOCIATES, INC.

ENGINEERING ■ PLANNING ■ ARCHITECTURE  
662 GOFFLE ROAD, HAWTHORNE, N.J. 07506-3499

**LAN**

**LAN ASSOCIATES**

**ENGINEERING ■ PLANNING ■ ARCHITECTURE**  
662 GOFFLE ROAD, HAWTHORNE, N.J. 07506-3499

201-423-0350

FAX ■ 201-423-5175

REF 10  
Pg 2 of 16

August 4, 1992

Mr. Mark R. Souders, Case Manager  
Division of Waste Management  
Bureau of Environmental Evaluation &  
Cleanup Responsibility Assessment  
401 East State Street  
Trenton, NJ 08625

Subject: Results of Additional Groundwater  
Quality Delineation  
Microwave Semiconductor Corp.  
ECRA Case #89560  
LAN Job #2.3177.1

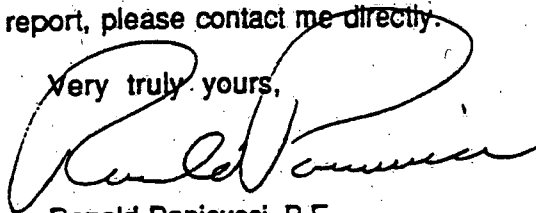
Dear Mr. Souders:

Please find enclosed three copies of the Results of Additional Groundwater Quality Delineation Report for the Microwave Semiconductor Corp. facility in Somerset, New Jersey. The enclosed report addresses the Department's March 24, 1992 letter as well as the Department's April 16, 1992 Report of Inspection for the SGS-Thompson Microelectronics, Inc. ECRA case (Case #91759).

The results of the additional groundwater investigations performed at the facility indicate that the compounds detected in monitoring well MW-2 are confined to the MW-2 location, are not migrating off site, and have not migrated vertically. The report requests that a Negative Declaration be issued, the ECRA case be closed, and monitoring well MW-2 continue to be sampled under a NJPDES discharge to groundwater permit.

If you should have any questions concerning the report, please contact me directly.

Very truly yours,



Ronald Panicucci, P.E.

RP:npj/8-4 Lett Souders (2.3177.1)

Enclosure: Results of Additional Groundwater Quality Delineation

cc: File #2.3177.1  
Mary Stockel, Esq. (Siemens, NYC)  
Jeffrey Marcus, Esq. (Siemens, NJ)  
Tod Read, Esq. (Gilbert & Kurent, D.C.)

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## 1.0 INTRODUCTION:

This report of The Results of Additional Groundwater Quality Delineation at the Microwave Semiconductor Corp. facility in Somerset, NJ is submitted in response to the DEPE letter dated March 24, 1992 (Appendix A). The DEPE required vertical delineation of volatile organic compounds detected in groundwater samples collected from monitoring well MW-2. This additional investigation completes the overall delineation of the volatile organic compounds detected in the groundwater as a result of soil contamination in the former drum storage area. All monitoring wells were sampled and analyzed for volatile organic compounds to initiate the quarterly monitoring required by the March 24, 1992 letter. The results of previous groundwater investigations are detailed in the March 12, 1991 and August 20, 1991 LAN Associates reports:

The vertical delineation investigation was implemented by installing a cluster of monitoring wells in the area of MW-2. Monitoring wells were installed at two additional depths to allow monitoring of discreet intervals within the bedrock. The data collected was used to establish a vertical profile of the groundwater and delineate the vertical extent of the compounds detected in MW-2. Samples were collected and analyzed for volatile organic compounds +15 (VO+15) analysis. In addition, the clustered wells, MW-2, MW-2A and MW-2B, were sampled for various general chemistry parameters to provide a comparison of the characteristics of the groundwater present in each of the wells and distinguish between different aquifers.

In addition to the monitoring well installation and sampling, the on-site drinking water well and monitoring wells MW-1, MW-3 and MW-4 were sampled for VO+15 analysis. The monitoring wells were surveyed by a licensed surveyor. All groundwater contour maps from past groundwater investigations were reconstructed with the elevations referenced to a local New Jersey Geodetic Control Datum. Additional groundwater contour maps were constructed using measurements collected during the most recent rounds of groundwater measurements and sampling.

In addition to the results of the groundwater investigation, it is our understanding that the DEPE requested information on the "pits" referenced in the report of inspection performed on April 14, 1992 by Mr. Mark Souders for ECRA case #91759 (Appendix B). An explanation on the

construction, intended use and current status of these "pits" is included in Section 3.0 of this report.

## 2.0 GROUNDWATER INVESTIGATION:

### 2.1 Well Installation:

Two additional monitoring wells were installed adjacent to monitoring well MW-2 on May 4 and May 5, 1992 to establish a vertical groundwater profile. The cluster well option was selected over the single well and packer system due to the potential for cross contaminating aquifers at various depths with a packer system. Although the DEPE recommended three cluster wells, only two additional water-bearing zones were encountered between 50' and 167' below grade. Based on these depths, and the dry zone between them, it was felt that the vertical extent of contamination could be delineated without a third, deeper well. The additional wells are identified as MW-2A and MW-2B. The two additional monitoring wells were installed within 10' of each other, as requested in the March 24, 1992 DEPE letter. The monitoring wells were installed by Samuel Stodthoff Company. Monitoring well MW-2A is located approximately 17' west of the existing monitoring well MW-2. Monitoring well MW-2B is located approximately 10' to the west of monitoring well MW-2. Figure 2-1 is a site plan showing the location of the monitoring wells.

MW-2A was installed as a bedrock monitoring well with a 25' open bore hole. A 6" steel casing was set to 45' below grade and was cemented in place. A 6" bore hole was advanced to 75' below grade. Damp zones were encountered at approximately 50' and 70'. The boring for MW-2B was advanced until a significant amount of water was encountered. A 6" steel casing was cemented in place to 125' below grade. The bore hole was advanced until a wet zone was encountered at 157' and continued through the wet zone to 167' below grade. This water bearing zone produced approximately 15 to 20 gallons per minute while the well was being developed. No groundwater was encountered while advancing the borehole from the 75' to the 155' below grade interval. Due to the length of the open bore hole (42'), a 2" PVC monitoring well was installed in the bore hole. The well was constructed with a #2 slot well screen extending from 157' to 167' below grade. The casing was filter packed with sand, and a bentonite seal was installed. A mixture of portland cement and 5% bentonite was used to grout the remainder of the pvc casing in place.

Figure 2-2 shows the hydrogeologic cross section in the area of the monitoring well cluster. Boring logs, well permits, and well certifications are included in Appendix C.

## 2.2 Groundwater Sample Collection:

On May 26 and May 27, 1992, samples were collected from all of the monitoring wells on site and the on-site domestic well. Monitoring well MW-2B was sampled on May 26, 1992. Prior to purging and sampling, field measurements were obtained on depth to groundwater, the presence of sheens or free product, and volatile compounds using a TIP photoionization detector. The well was purged using a stainless steel bladder pump. The remaining wells were sampled on May 27, 1992. The remaining wells were purged using a stainless steel submersible pump. All samples were obtained using dedicated, laboratory decontaminated, Teflon bailers. Temperature, pH and conductivity were monitored during purging. Sample collection logs containing all data collected in the field are provided as Appendix D. The on-site domestic well was sampled on May 27, 1992. The sample was collected from the tap located nearest the well. The water was allowed to run for approximately 15 minutes at 5 - 7 gallons/minute prior to collection of the sample.

## 2.3 Presentation and Discussion of Results:

The results of the groundwater analysis are summarized in Tables 2-1 through 2-3. The complete Enseco Laboratory Report with QA/QC data is included as Appendix E.

The volatile organic compounds; 1,1-Dichloroethane, 1,1-Dichloroethylene, 1,1,1-Trichloroethane, 1,1,2-Trichloroethane, and Trichloroethylene were detected in MW-2. However, as seen in Table 2-3, the concentrations of all detected compounds have decreased over the last several rounds of sampling.

The results of analysis for MW-2A indicate that only 1,1-Dichloroethylene and 1,1,1-Trichloroethane were detected. The 1,1,1-Trichloroethane is present at a concentration below the proposed Class IIA groundwater standard (24 ppb vs. 30 ppb). The concentration of 1,1-Dichloroethylene exceeds the proposed Class IIA standard by only 1 ppb (3 ppb vs. 2 ppb). The value reported for 1,1-Dichloroethylene is below the method detection limit and, therefore is an estimated quantity.



The results of analysis for MW-2B indicate that no volatile organic compounds are present above the method detection limits.

Of the remaining monitoring wells sampled, all compounds are below the proposed Class IIA cleanup standards with the exception of Trichloroethylene in monitoring wells MW-1 and MW-3. In monitoring well MW-1, Trichloroethylene exceeds the proposed cleanup standard by only 4 ppb, and in monitoring well MW-3, Trichloroethylene exceeds the proposed cleanup standard by only 1.6 ppb. The value reported for monitoring well MW-3 is below the method detection limit, and therefore, is an estimated quantity. The historical results show that the total volatile organic compounds in all wells have either remained relatively constant or have decreased over time. The total concentration of volatile organic compounds in all wells except MW-2 is below 50 ppb. This indicates that the contamination detected at monitoring well MW-2 has been satisfactorily delineated in both the vertical and horizontal directions.

The results of analysis on the sample collected from the on-site potable well identified as DWW indicate that no volatile organic compounds are present above or near the method detection limits.

Analysis for various general chemistry parameters was also performed on the three clustered wells, MW-2, MW-2A, and MW-2B, to provide data to determine if the three water bearing zones encountered are hydraulically connected. The parameters included pH, total dissolved solids, specific conductivity, turbidity, cations and anions. These results are summarized in Table 2-2. A comparison of the characteristics of each of the samples indicates that the groundwater encountered in MW-2 and MW-2A have similar characteristics. The groundwater sample from MW-2B has different characteristics than the two shallower wells. This comparison indicates that the water present in MW-2 and MW-2A may be hydraulically connected. However, the groundwater encountered in MW-2B is not hydraulically connected with the groundwater encountered in MW-2A or MW-2.

The monitoring well elevations were surveyed on July 8, 1992. The monitoring well Certification Form B's are provided as Appendix F. All of the groundwater contour maps generated for the site have been reconstructed utilizing this data and are included as Appendix G. The groundwater contour map generated from elevations measured on May 26, 1992 is provided

as Figure 2-3. A subsequent round of measurements was made on July 8, 1992. This map is provided as Figure 2-4. As previously reported, groundwater flow direction is to the northwest, toward MW-4.

Based on the groundwater contour data and the analytical data collected over an 18 month period, it is concluded that the groundwater contamination detected in area of MW-2 has been fully delineated in the horizontal and vertical directions. The results of analysis indicate a reduction in concentrations over time. This trend evidences that all sources of contamination have been removed. Therefore, Microwave Semiconductor Corp. requests that this ECRA case be closed and that continued groundwater quality monitoring be conducted under the NJPDES program.

### 3.0 PLASTIC LINED PIT INVESTIGATION:

In response to an inspection of the facility by Mr. Mark Souders, DEPE Case Manager, on April 14, 1992 under ECRA Case #91759, Microwave Semiconductor was requested by SGS Thompson to investigate the use and purpose of the plastic lined pits adjacent to the eastern side of the former hazardous substance storage area. The location of the pits are shown on Figure 3-1. The pits were inspected by LAN Associates personnel on May 4, 1992. The three pits are present to the east of drum storage area containment dike on the eastern side of the pole barn. The plastic lined pits consist of 18" pvc piping set in the ground to form sleeves for five gallon plastic pails. They were designed so any runoff that was collected in the pails could be removed by lifting the pail and transferring the collected material to a 55 gallon drum for storage and disposal. A 2" pvc pipe is present in the containment dike curbing in line with each of the plastic lined pits. Each of the pvc pipes extends approximately 12" from the curb and is sealed by a 2" pvc plug. The interior of the containment area was inspected. Each pvc pipe forms a potential drain from the containment diking. SGS Thompson employees who were familiar with the operations of the facility under Microwave Semiconductor ownership were questioned regarding the use of the plastic lined pits. The pits were reportedly intended to be used to hold 5 gallon pails which would receive the drained stormwater from the containment area. However, due to the construction of a roof over the containment area, the final connection of the pipes to the 5 gallon pails was never completed. The pipes were plugged and have never been used as discharge points. Therefore, this area is not an environmental concern. Photographs taken of the plastic lined pits and the plugged pipes are provided as Appendix H.

# APPENDIX D

## Groundwater Sample Collection Logs

REF 10  
Pg 11 OF 16  
Well No. MW-1

Purge Volume: 33 Gal

[illegible]

REF 10  
Pg 12 OF 16  
Well No. MW-2

Project: Microwave Semiconductor		
Client: Siemens		
Groundwater Depth:		Sheet No 1 of 1
Prior to Purge: 27.225'	Well Diameter: 6" OPEN	Job #2.3177.1
After Purge: 39'	Well Depth: 43.35'	Date: 5/27/92
Prior to Sample: 34.5'	Water Volume in Well: 23.4 Gal	Sampler: RS
Purge Method: Submersible Pump	Purge Volume: 17 Gal	

[illegible]

LAN ASSOCIATES, Inc.  
6920 US 10, Suite 200, Hawthorne, NJ 07506  
201-423-8350

REF 10  
Pg. 13 of 16  
Well No. MW-2A

Project: Microwave Semiconductor

Client: Siemens

Groundwater Depth:

Prior to Purge: 43.125'

After Purge: 62.5'

Prior to Sample: 49.2'

Purge Method: Submersible Pump

Well Diameter: 6" OPEN

Well Depth: 72.4'

Water Volume in Well: 42.3 Gal

Purge Volume: 42 Gal

Sheet No. 1 of 1

Job #2.3177.1

Date: 5/27/92

Sampler: RS

Time	Temp/pH/Cond.	Volume Purged	Remarks
10:08	13°/8.45/180	1	Cloudy, No Odors TIP Reading - 0
10:15	13.5°/8.34/180	5	Cloudy, No Odors
10:24	14.5°/8.65/174	10	Cloudy, No Odors
10:50	14°/8.40/189	20	Cloudy, No Odors
11:00	14°/8.30/196	30	Cloudy, No Odors
11:05	14°/8.32/200	35	Water @ 58.5'
11:20	14°/8.30/195	42	Water @ 62.5' Stop Pump
15:00			Water @ 49.2' Sample collected using laboratory cleaned teflon bailer.

REF 10.  
Pg 14 OF 16  
Well No. MW-2B

**Client: Siemens**

Sheet No -1 -- of -- 1

Well Diameter: 2"

**Job #2.3177.1**

Well Depth: 165'

**Date: -5/26/92**

Water Volume in Well: 19.2 Gal

**Sampler: RS**

**Purge Volume: 60 Gal**

[illegible]

REF 10  
Pg 15 OF 16  
Well No. MW-3

**Client: Siemens**

Sheet No 1 of 1

Job: #2.3177.1

Date: 5/27/92

**Sampler: RS**

100

135



REF 10  
Pg 16 of 16  
Well No. MW-4

**Well No. MW-4**

**Client: Siemens**

Sheet No 1 of 1

**Job #2.3177.1**

**Date: 5/27/92**

**Sampler: RS**

10

[illegible]

**REFERENCE 11**

RESULTS OF  
ECRA SAMPLING PLAN  
IMPLEMENTATION

Microwave Semiconductor Corp.  
North Building  
100 School House Road  
Somerset, New Jersey

ECRA Case #89560

Submitted to:

Division of Waste Management  
Bureau of Environmental Evaluation &  
Cleanup Responsibility Assessment  
401 East State Street  
Trenton, NJ 08625

Attn: Mr. Mark R. Souders,  
Case Manager

LAN Job #2.3177.1  
Date: March 12, 1991

RECEIVED

MAR 15 1991

**LAN**  
LAN ASSOCIATES, INC.

ENGINEERING ■ PLANNING ■ ARCHITECTURE  
662 GOFFLE ROAD, HAWTHORNE, N.J. 07506-3499

201-423-0350

FAX ■ 201-423-5175

# LAN

LAN ASSOCIATES

ENGINEERING ■ PLANNING ■ ARCHITECTURE  
662 GOFFLE ROAD, HAWTHORNE, N.J. 07506-3499

201-423-0350

FAX ■ 201-423-5175

March 12, 1991

Division of Waste Management  
Bureau of Environmental Evaluation &  
Cleanup Responsibility Assessment  
401 East State Street  
Trenton, NJ 08625

Attention: Mr. Mark R. Souders, Case Manager

Subject: Results of ECRA Sampling  
Plan Implementation  
Microwave Semiconductor  
Corp.  
ECRA #89560  
LAN Job #2.3177.1

Dear Mr. Souders:

Pursuant to your conversation with E. Gina Chase, Esq. of Robinson, St. John and Wayne, LAN Associates is submitting three copies of the Results of ECRA Sampling Plan Implementation for the Microwave Semiconductor Corp. facility located in Somerset, NJ. The laboratory results are summarized in tabular form in the report. One copy of each of the Laboratory, Tier II reports are provided.

Very truly yours,



Ronald Panicucci, P.E.

Enclosure: Report: Results of ECRA Sampling Plan Implementation  
for the Microwave Semiconductor Corp. Facility.

RP:jvs/31771/3/12-Let Souders-rp

cc: File #2.3177.1, w/att  
E. Gina Chase, Esq., w/att  
Mr. Tom McGeough, w/att

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3

# LAN ASSOCIATES, Inc.

862 Goffe Road, Hawthorne, NJ 07506

201-423-0350

PG 6 of 12

Boring No. MW-1

Project: Microwave Semiconductor North Building

Sheet No. 1 of 1

Client: Robinson, Wayne,

Job # 2.3177.1

Boring Contractor: Samuel Stodhoff

G.S. Elevation

Groundwater

Cas.

Samp.

Core

Tube

W.L. Ref. Elev.

Date

Water Depth

Water Elev.

Intake

Type

Date Started 11/13/90

12/5/90

20.08'

19-45'

Diam.

Date Finished 11/14/90

Weight

Driller Jim Hall

Fall

Engineer/Geologist M. Latronica

Well Construction

Depth (ft.)

Samples

No.

Type

Rec.

Blows/6"

Classification

Remarks

6" Ø SCHED 40 STEEL  
PORTLAND CEMENT

0  
5  
10  
15  
20  
25  
30  
35  
40  
45  
50

Grey-Brown, Silty CLAY  
little med. sand

No odors, No readings on TIP

weathered red shale

No odors, No readings on TIP

Competent bedrock

No odors, No readings on TIP,  
Damp

No odors, No readings on TIP,  
Wet

End of boring



# LAN ASSOCIATES, Inc.

662 Goffe Road, Hawthorne, NJ 07506

201-429-8350

11/15/90  
Pg 7 of 12

Boring No. MW-2

Project: Microwave Semiconductor North Building

Sheet No. 1 of 1

Client: Robinson, Wayne

Job # 2.3177.1

Boring Contractor: Samuel Stodhoff

G.S. Elevation

Groundwater

Cas.

Samp.

Core

Tube

W.L. Ref. Elev.

Date

Water Depth

Water Elev.

Intake

Type

Date Started 11/13/90

12/5/90

23.93'

18-43'

Diam.

Date Finished 11/14/90

Weight

Driller Jim Hall

Fall

Engineer/Geologist M. Latronica

Well Construction	Depth (ft.)	Samples				Classification	Remarks
		No.	Type	Rec.	Blows/6"		
6" Ø SCHED 40 STEEL PORTLAND CEMENT	0					Grey-Brown, Silty CLAY little med. sand	No odors, No readings on TIP
						weathered red shale	No odors, No readings on TIP
	5						
6" Ø OPEN BOREHOLE	10					Competent bedrock	No odors, No readings on TIP
	15						
6" Ø OPEN BOREHOLE	20						
	25						
6" Ø OPEN BOREHOLE	30						
	35						
6" Ø OPEN BOREHOLE	40						
	45					End of boring	Damp
6" Ø OPEN BOREHOLE	50						

DEF 11  
Pg 8 of 12

Sheet No. 1 of 1

**Job # 2.3177.1**

G.S. Elevation	
1	100
2	100
3	100
4	100
5	100
6	100
7	100
8	100
9	100
10	100
11	100
12	100
13	100
14	100
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W.L. Ref. Elev.	
-----------------	--

ate Started 11/13/90

ate Finished 11/14/90

**Triller Jim Hall**

Engineer/Geologist M. Latronica

145

Ref. 11  
Pg. 9 of 12

F

REF II  
PG 10 OF 12

[illegible]

Ref 11  
Pg 11 of 12

Purge Volume: 35 Gal

148

**LAN ASSOCIATES, Inc.**

662 Goffle Road, Hawthorne, NJ 07506  
201-423-0350

REF 11  
Pg 12 of 12

Well No. MW-3

Project: #2.3177.1

Client: Microwave Semi-Conductor

Groundwater Depth

Sheet No 2 of 3

Prior to Purge: 19.5'

Well Diameter: 6" OPEN

Job #2.3177.1

After Purge: 43.9'

Well Depth: 46.6'

Date: 1/28/91

Prior to Sample: 42.4'

Water Volume in Well: 39.42 Gal

Sampler: Glenn Panicucci

Purge Method: Submersible Pump

Purge Volume: 46 Gal

Time	Temp/pH/Cond.	Volume Purged	Remarks
13:25	52°/7.05/437	0	Initial Cloudy, No Odors TIP Reading - 4.6
13:27	52°/7.14/461	5	Cloudy, No Odors
13:30	52°/7.18/423	10	Clearing
13:35	52°/7.16/435	20	Clearing, No Odors
13:45	54°/7.32/442	30	Clear
13:55	54°/7.40/404	40	Well would run dry if allowed. to continue. Stopped purging.
16:00	53°/7.68/427		42.4' to groundwater, sampled well using a designated, laboratory cleaned teflon bailer.

**REFERENCE 12**

## RECORD OF TELEPHONE CONVERSATION

REF 12  
Pg 1 of 2

DATE 7/10/92

TO Harry Wister of SGS-Thomson 215-361-6400  
NAME/FILE NO.FROM Douglas L. DownsCLIENT/PROJECT ARCS II

SUBJECT \_\_\_\_\_

CHARGE: DEPT. NO. 759 CLIENT SYMBOL EPA OFS NO. \_\_\_\_\_

## DISCUSSION WITH

Harry Wister of SGS-Thomson MicroElectronics. The facility in Somerset is a mechanical assembly operation for the Amplifier Division of SGS. All other processing has been shut down at the plant. The number of people working there has reduced to 35 people. The plating shop has been vacated and is now used to store drums of waste materials. A vapor degreasing unit is still used. It occupies a space of 2' x 3'. Freon <sup>TF and</sup> TMC is used in this operation as well as small amounts of TCA (trichloroethane) & methylene chloride.

## COMMENTS

Freon TF is mainly used. Another source of contaminants is from the etching operation. Perchloride is used here. Coating operations may also produce waste but this would be a very minimal amount. All coating is done by hand. The coating process is so small that it <sup>DO</sup> does not justify buying a sprayer unit for this activity. A waste hauler comes every 60 days. Waste from past process and new processes are disposed. The waste hauler is Advanced Environmental Technology Corporation (AETC).

BY D. DownsNAME  
151TITLE  
AnalystDEPT. NO.  
759

CC:

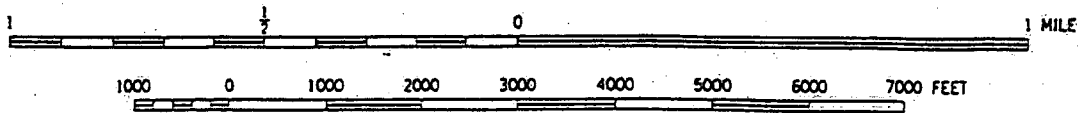


REF ID: A6120F2  
All discharge water is treated by the county through a permit with them.

There has been two cleanups. One consisted of cleaning the inside of the old gallium arsenide process which failed at the plant. A company was hired to decontaminate the inside of the building of arsenic trichloride. The other investigation was an ECRA report.

ICA had been bought by the gallon in the past. Not much of it around.

**REFERENCE 13**



QUADRANGLE LOCATION

FIGURE 1

**REFERENCE 14**

# NEW BRUNSWICK QUADRANGLE

NEW JERSEY

7.5 MINUTE SERIES (TOPOGRAPHIC)

4.8 MI. TO INTERCHANGE NO. 10  
2 080 000 FEET

74°22'30"

5.7 MI. 547

6165 III SW  
(PLAINFIELD)

WOODBRIDGE 7.6 MI.  
METUCHEN 4.6 MI.

549

25'

RAHWAY 11 MI.  
AVENEL 8.5 MI.

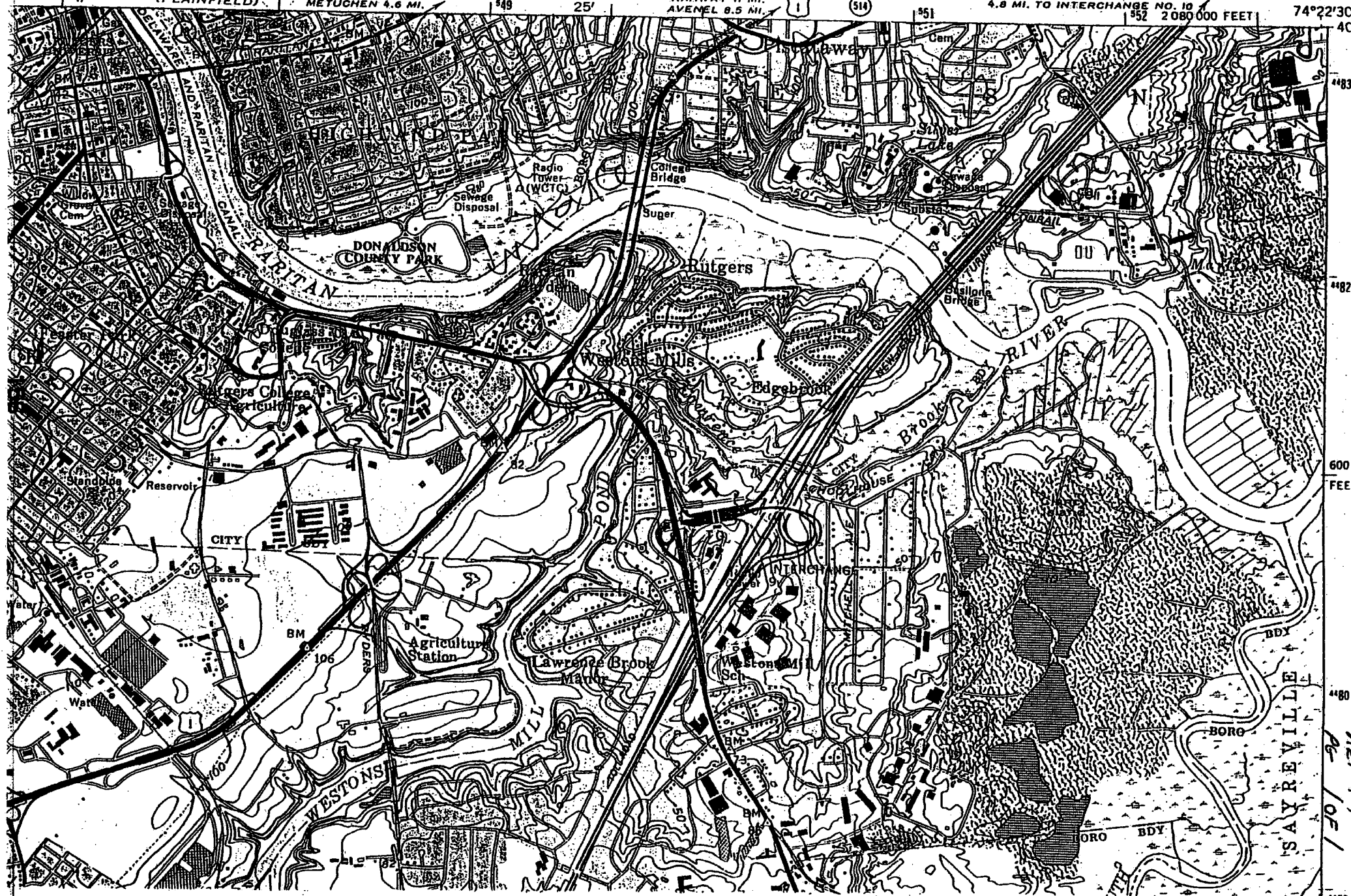
1

514

551

552

40



483

482

600

FEET

480

BDY

BORG

SAYREVILLE

BDY

ORO

107

**REFERENCE 15**

## RECORD OF TELEPHONE CONVERSATION

DATE 6/15/92TO Frank Metz - Engineering Dept - Franklin Township 908-873-2500  
NAME/FILE NO.FROM Dorothea Le DoursCLIENT/PROJECT SGS Thomson Micro ElectronicsSUBJECT Zoning-FloodsCHARGE: DEPT. NO. 759 CLIENT SYMBOL EPA OFS NO. \_\_\_\_\_

## DISCUSSION WITH

Frank Metz of the Franklin Township Engineering Department. The SGS Thomson Micro Electronics property is zoned as C-zone. This is an area with no flooding or minimal flooding.

## COMMENTS

BY Dorothea Le Dours Asst 759  
NAME/FILE NO.

**REFERENCE 16**



## RECORD OF TELEPHONE CONVERSATION

REF 16  
PG 1 OF 1DATE 1/28/92TO MAY JAKOFSKY / Co. of Engineers - Chicago District  
NAME/FILE NO.FROM Doreen M. InnaCLIENT/PROJECT ARCS II / G.A. Robinson / Trondegout / Campbell / STERLINGSUBJECT Zone C DesignationCHARGE: DEPT. NO. 759 CLIENT SYMBOL EPA OFS NO. \_\_\_\_\_DISCUSSION WITH Max Jakofsky of the U.S. Co. of Engineers - Chicago District 312-353-6480

Zone A 100 yr

Zone B 500 yr

Zone C &gt; 500 yr

Zone C is designated to nearly 30% of all properties. It is assumed to be an area of minimal flooding.

COMMENTS

**REFERENCE 17**

# RECORD OF TELEPHONE CONVERSATION

REF 17  
PG 1 OF 1

DATE 6/16/92

TO Joe Schenk - Newark Weather Service 201-624-8118  
NAME/FILE NO.

FROM Dorothea Danner

CLIENT/PROJECT Biodynamics / SBS Thomson Micro Electronics

SUBJECT 2 Year 24 hour rainfall data

CHARGE: DEPT. NO. 759

CLIENT SYMBOL EPA

OFS NO. \_\_\_\_\_

DISCUSSION WITH

Joe Schenk of Newark Airport Weather Service.

1991

1992

Jan.	0.95
Feb.	0.31
Mar.	2.57
Apr.	2.50
MAY	2.37
June	0.57
July	1.37
Aug.	2.13
Sept.	1.59
Oct.	0.77
Nov.	1.25
Dec.	1.26

Jan.	0.44
Feb.	0.60
Mar.	0.88
Apr.	0.36
MAY	1.47
June	2.97

REMARKS

He also suggested calling the National Weather Service in North Carolina at 704-259-0682.

BY

Dorothea Danner  
NAME

Seifert  
FILE

759  
DEPT. NO.

**REFERENCE 18**

**SURFACE WATER INTAKE LOCATIONS**  
**BUREAU OF SAFE DRINKING WATER**  
With Longitude & Latitudes

NJ

Prepared by: Michael Mariano

REF 18  
Pg 2 of 6

STATE OF NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION  
BUREAU OF SAFE DRINKING WATER  
MARCH 1992

PWSID	PURVEYOR NAME	PHONE NUMBER	INTAKE MUNICIPALITY	INTAKE LOCATION	LONGITUDE	LATITUDE
0102001	ATLANTIC CITY WATER DEPARTMENT	609-345-3315	ABSECON	DOUGHTY POND - South tip Mays Landing Rd. & Hill Rd.	74 31 21.6	39 25 48.75
0238001	HACKENSACK WATER DEPARTMENT	201-767-9300	PARANUS	SADDLE RIVER - South of intersection of Paranus Rd. & Midland Ave.		
			ORADELL	HACKENSACK RIVER - At Martin Ave.	74 01 36.64	40 56 47.63
			NORTHVALE	SPARK HILL CREEK - Northwest of intersection of Pegasus Ave. & Hill Terr.		
			ORADELL	LONG SWAMP BROOK - At Martin Ave.		
0305001	BURLINGTON CITY WATER DEPARTMENT	609-386-0307	EAST BURLINGTON	DELAWARE RIVER - 1/4 mile north of Assiscunk Creek	74 50 21.82	40 05 19.78
			BURLINGTON ISLAND	BURLINGTON ISLAND LAKE		
0325001	FORT DIX	609-542-5040		RANCOCAS CREEK	74 37 47.10	39 57 36.08
1613001	NJDWSC	201-575-0225	POMPTON LAKES	RAHAPO RIVER - At Pompton Lake (pump to Manaque Res.)		
			MANAQUE	MANAQUE RESERVOIR - Ringwood Ave & Oricchio Ave	74 17 39.4	41 02 47.67
0717001	CITY OF ORANGE	201-762-6800	SOUTH ORANGE	ORANGE RESERVOIR - On West branch of Rahway River 40 ft upstream from dam	74 17 19.48	40 45 33.65

REF 18  
Pg 3 of 6

STATE OF NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION  
BUREAU OF SAFE DRINKING WATER  
MARCH 1992

PWSID#	PURVEYOR NAME	PHONE NUMBER	INTAKE MUNICIPALITY	INTAKE LOCATION	LONGITUDE	LATITUDE
0712001	NJ AMERICAN NORTHERN DISTRICT	201-376-8800	HILLBURN	PASSAIC RIVER - At Kennedy Parkway	74 21 56.16	40 44 42.88
			SHORT HILLS	CANOE BROOK - North of Route 24	74 21 13.31	40 44 40.77
			CALDWELL	POMPTON RIVER - At Bridges Rd.		
0714001	NEWARK WATER DEPT	201-256-4965		PEQUANNOCK WATER SHED	74 25 27.07	41 01 32.44
0906001	JERSEY CITY WATER DEPARTMENT	201-547-4390	BOONTON	BOONTON RESERVOIR - 200 yds northwest of Washington St Bridge	74 23 51.41	40 53 33.80
			ROCKAWAY	SPLIT ROCK RESERVOIR - Empties into Boonton Res. via Rockaway River		
1017001	LANBERTVILLE WATER DEPARTMENT	609-397-0526	LANBERTVILLE	SWAN CREEK RESERVOIR EAST	74 55 28.18	40-21 40.52
			LANBERTVILLE	SWAN CREEK RESERVOIR WEST	74 55 43.90	40 21 46.63
			LANBERTVILLE	DELAWARE-RARITAN CANAL - At Swan St. (Emergency)	74 56 46.94	40 21 55.90
1111001	CITY OF TRENTON	609-989-3208	TRENTON	DELAWARE RIVER - At Rt 29 north of Calhoun St. Bridge	74 46 45.57	40 13 19.06
1216001	PERTH AMBOY	908-826-0290	OLD BRIDGE	TENNENTS POND - At Waterworks Rd.	74 20 12.23	40 25 33.99
1225001	MIDDLESEX WATER CO	908-634-1580	EDISON	DELAWARE-RARITAN CANAL & HILLSTONE RIVER - At Rt 18	74 27 34.00	40 30 25.66

STATE OF NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION  
BUREAU OF SAFE DRINKING WATER  
MARCH 1992

PWSID#	PURVEYOR NAME	PHONE NUMBER	INTAKE MUNICIPALITY	INTAKE LOCATION	LONGITUDE	LATITUDE
1214001	NEW BRUNSWICK WATER DEPARTMENT	908-745-5060	NEW BRUNSWICK	LAWRENCE BROOK - At Burnet St.	74 24 49.97	40 28 58.48
			NEW BRUNSWICK	DELAWARE-RARITAN CANAL - At George St & College Ave		
1214001	NORTH BRUNSWICK	908-247-8922	FRANKLIN TWP	DELAWARE-RARITAN CANAL - At Saydan Ave.	74 34 59.83	40 27 38.49
1219001	SAVERVILLE	908-390-7000	OLD BRIDGE	SOUTH RIVER - At Main St North of Rt 18	74 21 41.75	40 24 58.99
1352005	NEW JERSEY WATER SUPPLY AUTH.		WALL TWP	MANASQUAN RIVER - Hospital Rd. North of Garden State Parkway (Pump to Manasquan Reservoir)	74 11 27.43	40 10 31.82
1345001	NJ AMERICAN - MOMMOUTH		WALL TWP	MANASQUAN RIVER - Hospital Rd. North of GSP (Pump to Glendola Reservoir)	74 04 45.13	40 11 42.47
			NEPTUNE TWP	SHARK RIVER - Off Corlies Ave. 2000' North of GSP	74 04 16.51	40 11 53.69
			NEPTUNE TWP	JUMPING BROOK - At Greensgrove & Corlies Aves	74 03 57.82	40 12 11.83
			LINCROFT	SWINNING RIVER RESERVOIR - 1000' West of Swinring Riv.	74 07 13.35	40 19 06.70
1326004	HATCHAPONIX		MANALAPAN	HATCHAPONIX BROOK - At Wilson Ave.	74 21 58.42	40 18 33.20
1401001	TOWN OF BOONTON	201-299-7740	MONTVILLE	TAYLORTOWN RESERVOIR - At Taylortown Rd.	74 23 00.06	40 57 13.06



STATE OF NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION  
BUREAU OF SAFE DRINKING WATER  
MARCH 1992

PWSID1	PURVEYOR NAME	PHONE NUMBER	INTAKE MUNICIPALITY	INTAKE LOCATION	LONGITUDE	LATITUDE
1403001	BUTLER WATER DEPT	201-838-7200	BUTLER	KIKEOUT RESERVOIR - At Resevior Rd.	74 21 58.63	40 59 24.13
1424001	SOUTH EAST MORRIS COUNTY	201-538-5400	MENDHAM	CLYDE POTTS RESERVOIR - Cold Hill Rd & Woodland Rd	74 34 51.98	40 48 21.61
1504001	BRICK TWP	908-458-7000		NETEBECONK RIVER	74 08 36.45	40 04 28.87
1603001	HALEDON WATER DEPT		HALEDON	HALEDON RESERVOIR - Lower Basin pump station at Belmont Ave.		
1605002	PASSAIC VALLEY WATER COMMISSION	201-256-1566	WAYNE	POMPTON RIVER - At Confluence of Ramapo & Pequannock Rivers		
			TOTOWA	PASSAIC RIVER - At Union Blvd.	74 13 51.49	40 52 58.46
1700300	E.I. DUPONT PENNSYLVIA	609-299-5000		SALEN CANAL	75 30 19.63	39 41 08.91
1712001	SALEN WATER DEPT	609-935-0350	CLINTON TWP	LAUREL LAKE - At Waterworks Rd & Lake Ave.	75 24 28.33	39 32 52.62
			ALLOWAY TWP	ELKINTON HILL POND - Waterworks Rd. 3 miles east of Laurel Lake (Seasonal)		
1903001	BRANCHVILLE WATER DEPARTMENT	201-940-6463	FRANKFORD TWP	BRANCHVILLE RESERVOIR - 7300' northeast of Mattison Ave & Mattison School Rd.		
1906002	FRANKLIN WATER DEPT	201-827-7060	FRANKLIN BOROUGH	FRANKLIN POND - Franklin Ave. Across from plant		
1915001	MERTON WATER DEPT	201-383-3521	SPARTA TWP	MORRIS LAKE	74 34 17.07	41 08 14.40

REF 18  
Pg 6 of 6

STATE OF NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION  
BUREAU OF SAFE DRINKING WATER  
MARCH 1992

PWSID#	SUPPLYOR NAME	PHONE NUMBER	INTAKE MUNICIPALITY	INTAKE LOCATION	LONGITUDE	LATITUDE
1921001	SUSSEX WATER DEPT	201-967-5622	WANTAGE TWP	COLESVILLE RESERVOIR - At Brink Rd. 400' west of Rt. 23		
2013001	RAHWAY WATER DEPT	201-388-0086	RAHWAY	RAHWAY RIVER - At pump station off Valley Rd & Lambert St.	74 17 26.57	40 37 06.41
2004002	ELIZABETHTOWN WATER COMPANY	201-345-4444	BRIDGEWATER TWP	RARITAN & HILLSTONE RIVERS - at confluence	74 34 01.02	40 32 33.33
2108001	HACKETTSTOWN NWA	201-852-3622	DRAKESTOWN	NINE HILL RESERVOIR - Off Nine Hill Rd.	74 47 41.62	40 51 23.77
			DRAKESTOWN	BURD RESERVOIR - Off Reservoir Rd. Southeast of	74 48 01.64	40 50 27.91

**REFERENCE 19**

MS Dorothy Downs

EPA

Chicago

1-312-876-0488

Telephone #

From

Company

Location

Phone

Original  
Disposition☐ Destroy☐ Return☐ Call for pickup

Cheryl Sila Koski

Middlesex Wtr Co.

1500 Ronson Rd, Iselin

908-750-5981

908-634-1500

## YEAR ENDED

DECEMBER 31, 1991

Middlesex Water Company, organized in 1897, is engaged in the business of supplying water for domestic, commercial, industrial and fire protection purposes. Located approximately 30 miles southwest of New York City, the Company supplies water on a retail basis to a population of 200,000 in South Plainfield, Metuchen, Camden, Woodbridge, Edison, portions of Clark, on a wholesale basis to the Township of Edison, the Borough of Highland Park, Old Bridge Municipal Utilities Authority, Borough of Sayreville, Marlboro Township Municipal Utilities Authority (transmission contract only during 1990; transmission and water sales in 1991) and, under special contract, to East Brunswick.



## MINI-FACTS

1500 Ronson Road  
Iselin, N.J. 08830-0452  
(908) 634-1500

Incorporated — 1897

Service Area	55 sq. miles
Meters in Service	52,355
Hydrants in Service	4,024
Miles of Main	654
Utility Plant	\$101,547,531
Gross Annual Revenues	\$29,853,248
Taxes	\$7,508,860
Employees	135
Total Payroll	\$4,985,182
Annual Common Dividend (per share)	\$1.92
Earnings per Share — Common	
Stock 1,738,703 Shares	\$2.27
Common Stockholders	1,687
Delivered to Distribution System:	
Total (gallons)	14,571,889,000
Annual Average Daily (gallons)	39,922,984
Maximum Day (gallons)	56,232,000

**REFERENCE 20**

## RECORD OF TELEPHONE CONVERSATION

DATE Aug 11, 1992TO Ed O'Rourke New Brunswick Water Dept 908-745-5060  
(NAME/FILE NO.)FROM Kara McGuirk EbascoCLIENT/PROJECT ARCS II EPI-PASUBJECT Surface Water Intake in New BrunswickCHARGE: DEPT. NO. 759 CLIENT SYMBOL EPA OFS NO. \_\_\_\_\_DISCUSSION WITH Ed

New Brunswick has 2 main surface water intakes

1) Delaware-Raritan Canal, located @ George St & the John Lynch Bridge in New Brunswick. Pump rate =  $10.5 \times 10^6$  gal/day.  
This is a primary source of water.

2) Lawrence Brook Chain of lakes, located in N, S, & E. Brunswick, also supplies  $10 \times 10^6$  gal/day.

- Population served off of the Delaware-Raritan Canal is minimum of 50,000. Typically 100,000 people."

- 1990 Census data for New Brunswick = 41,711.

- Supply also for the town of Milltown, pop = 6,968

COMMENTS also emergency supply for North Brunswick  
& has connections w/ Franklin Township, pop = 42,780  
Highland Park, pop = 13,279  
East Brunswick, pop = 43,548

BY

Kara McGuirk Gendrin 759

**REFERENCE 21**

## RECORD OF TELEPHONE CONVERSATION

REF 21  
Pg 1 OF 1DATE 6/16/92TO Bob Soldwetal, Chief of Bureau, Freshwater Fisheries  
NAME/FILE NO.

609-292-8642

FROM Kara McGuirkCLIENT/PROJECT ARCS II - EPI - PASUBJECT Fisheries in Somerset County on Raritan RiverCHARGE: DEPT. NO. 759 CLIENT SYMBOL EPA OFS NO. \_\_\_\_\_DISCUSSION WITH Bob Soldwetal

- Raritan River is stocked w/ trout; other species are "naturally reproducing" - sunfish, shad, widemouth bass.
- State classification of Raritan is FW-2, or a "non-trout" River (trout do not reproduce in the river)
- no fisheries along the Raritan in Somerset county have been closed. although downstream, in Middlesex Co, fisheries have been closed due to contamination from a landfill near the river in Middlesex Co.

- COMMENTS
- Health advisories in New Brunswick Bay for crabs;
  - Health Advisories for Raritan River from Bay to Route 1 Bridge (Middlesex Co.) for: bluefish, white catfish, white perch, striped bass, & American eels. Some of these species may migrate up river as far as Somerset County.
  - some swimming in Raritan, not much; lots of recreational fishing.

BY Kara McGuirk Geologist 759  
NAME TITLE DEPT. NO.  
175



**REFERENCE 22**

# WETLAND/WATER TYPES FOUND ON THIS MAP:

(For Further Information on These Classification Types, See Supplemental Key.)

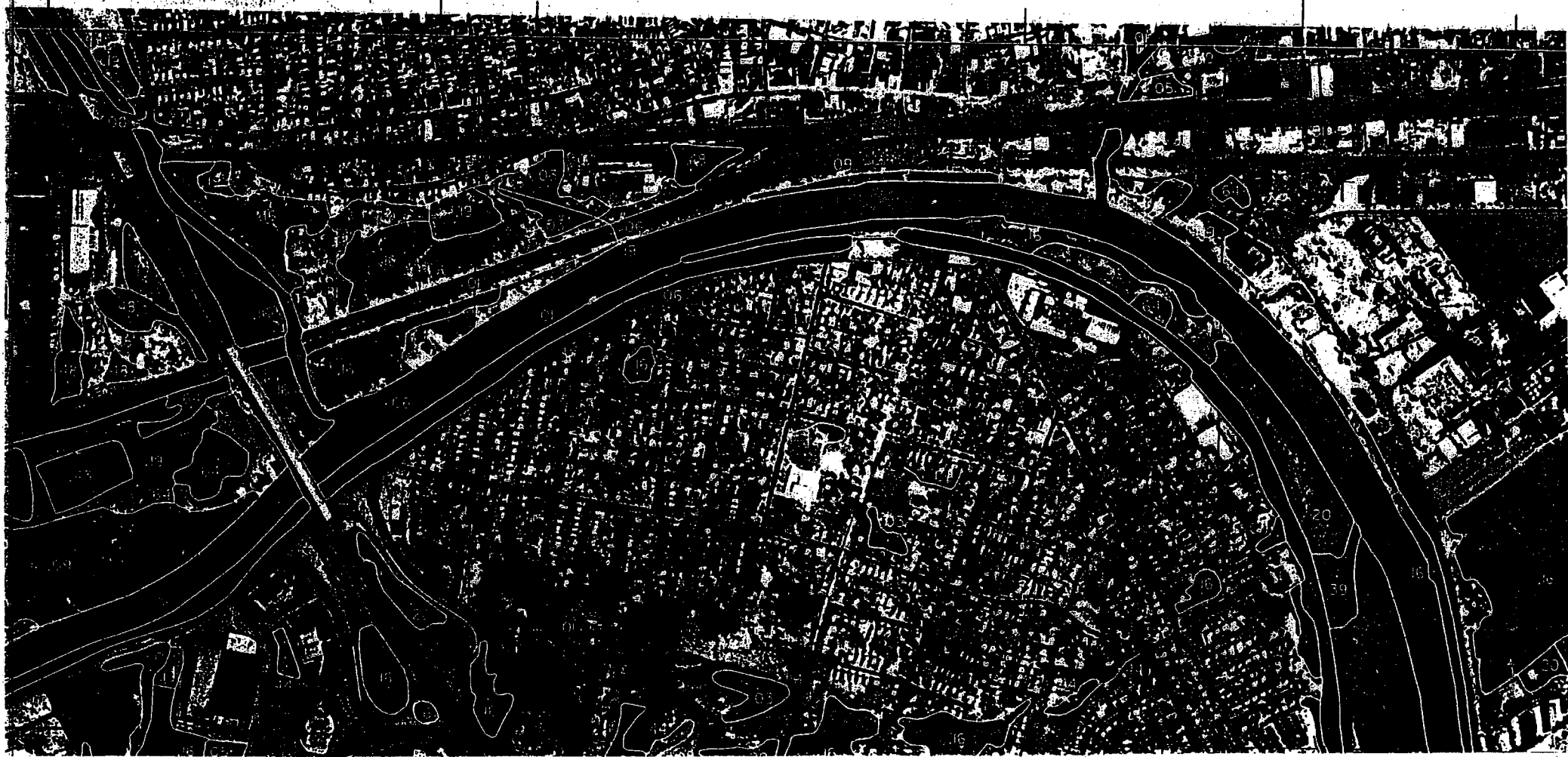
01 UPLAND	12 PSSIA	26 PEMIB/PSSIB	44 MODL	60 PFOIC/PSSIC	239 PSSIA/PEMIA
03 PFOIA	16 PFOIB	27 PSSIC	48 MODD	64 PEMIE	
05 PEMIC	19 PEMIB	38 PFOIA/PSSIA	50 PSSIC/PEMIC	81 PEMIA	
06 R2OW	20 PSSIB	39 PFOIE	51 PSSIB/PEMIB	100 PFO4B	
09 PFOIC	21 PFOIB/PSSIB	42 MODR	55 PSSIE/PEMIE	101 PFOI/4C	
11 POWHh	24 MODAg	43 POWHx	56 PFOIB/PEMIB	147 PFOI/4A	

Ref 22  
Pg 1 of 2

538000 m

74° 32' 30"

74° 31' 15"



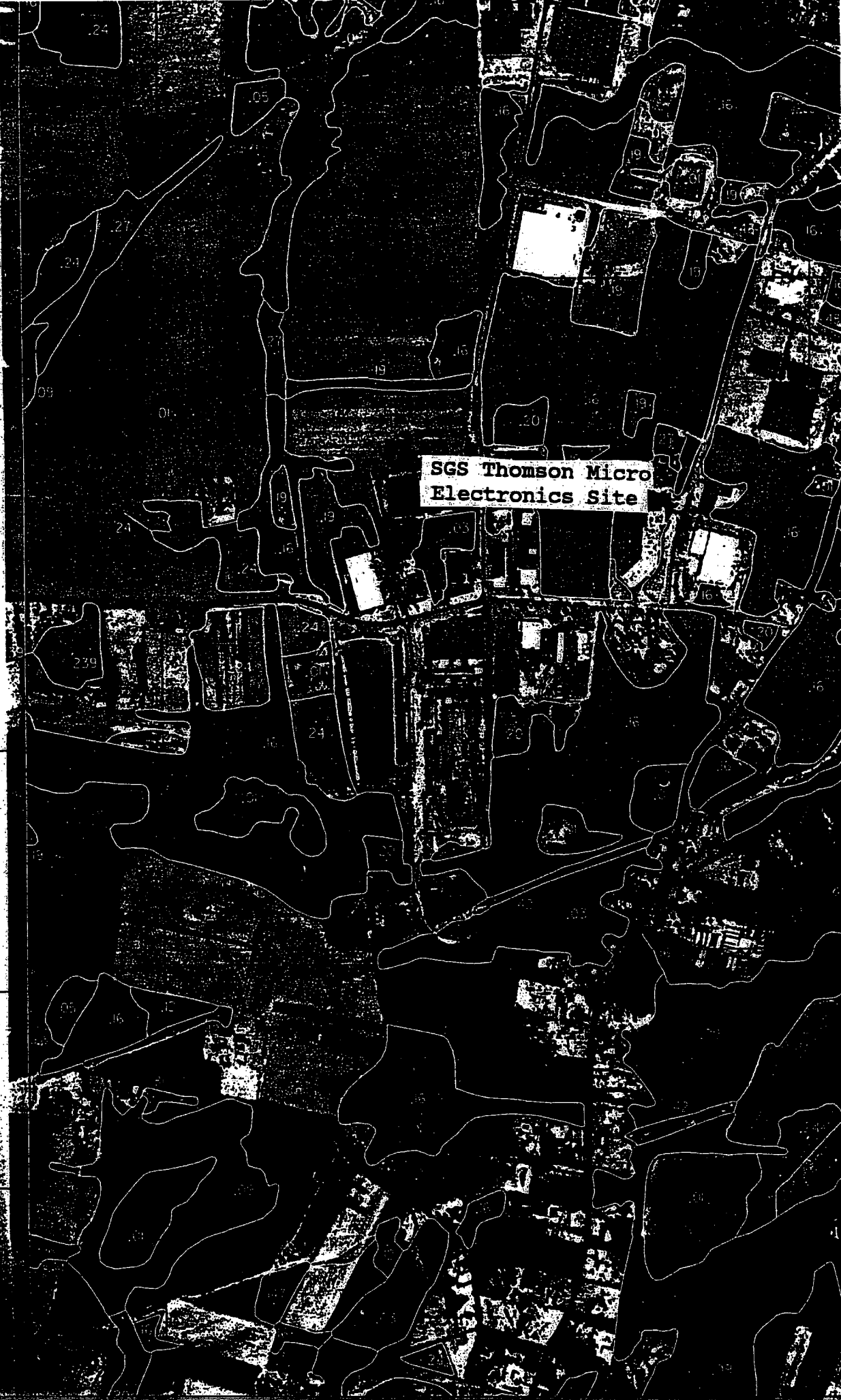
REF 22  
PG 2 of 2

620000 ft

SGS Thomson Micro  
Electronics Site

615000 ft

40° 31' 15"



**REFERENCE 23**

5/18/87

REF 23  
Pg 1 of 24

NEW JERSEY NATURAL HERITAGE PROGRAM  
POTENTIAL THREATENED AND ENDANGERED VERTEBRATE SPECIES  
IN MIDDLESEX COUNTY

AMERICAN BITTERN  
BOTAURUS LENTIGINOSUS

FEDERAL STATUS:  
STATE STATUS: LT

COUNTY  
OCCURRENCE: Y

HABITAT COMMENTS

Fresh water bogs, swamps, wet fields, cattail and bulrush marshes, brackish and saltwater marshes and meadows.

BARRED OWL  
STRIX VARIA

FEDERAL STATUS:  
STATE STATUS: LT

COUNTY  
OCCURRENCE: ?

HABITAT COMMENTS

Dense woodland and forest (conif. or hardwood), swamps, wooded river valleys, cabbage palm-live oak hammocks, especially where bordering streams, marshes, and meadows.

BOBOLINK  
DOLICHONYX ORYZIVORUS

FEDERAL STATUS:  
STATE STATUS: LT

COUNTY  
OCCURRENCE: ?

HABITAT COMMENTS

Tall grass areas, flooded meadows, prairie, deep cultivated grains, alfalfa and clover fields. In migration and winter also in rice fields, marshes, and open woody areas.

BOG TURTLE  
CLEMMYS MUHLENBERGII

FEDERAL STATUS: C2  
STATE STATUS: LE

COUNTY  
OCCURRENCE: ?

HABITAT COMMENTS

Slow, shallow rivulets of sphagnum bogs, swamps, and marshy meadows; sea level to 1200 m in Appalachians. Commonly basks on tussocks in morning in spring and early summer. Hibernates in subterreanean rivulet or seepage area.

COOPER'S HAWK  
ACCIPITER COOPERII

FEDERAL STATUS:  
STATE STATUS: LE

COUNTY  
OCCURRENCE: W\*

HABITAT COMMENTS

Primarily mature forest, either broadleaf or coniferous, mostly the former; also open woodland and forest edge.

GREAT BLUE HERON  
ARDEA HERODIAS

FEDERAL STATUS:  
STATE STATUS: LT

COUNTY  
OCCURRENCE: N\*

HABITAT COMMENTS

Freshwater and brackish marshes, along lakes, rivers, bays, lagoons, ocean beaches, mangroves, fields, and meadows.

5\18\87

KEF 23  
Pg 2 of 24

HENSLOW'S SPARROW  
AMMODRAMUS HENSLOWII

FEDERAL STATUS: COUNTY  
STATE STATUS: LE OCCURRENCE: ?

HABITAT COMMENTS

Open fields and meadows with grass interspersed with weeds or shrubby vegetation, especially in damp or low-lying areas. In migration and winter also in grassy areas adjacent to pine woods or second-growth woodland.

LONGTAIL SALAMANDER  
EURYCEA LONGICAUDA

FEDERAL STATUS: COUNTY  
STATE STATUS: LT OCCURRENCE: ?

HABITAT COMMENTS

Streamsides, spring runs, cave mouths, forested floodplains in South. May disperse into wooded terrestrial habitats in wet weather. Hides under rocks, logs, and other debris.

NORTHERN HARRIER  
CIRCUS CYANEUS

FEDERAL STATUS: COUNTY  
STATE STATUS: LE OCCURRENCE: Y

HABITAT COMMENTS

Marshes, meadows, grasslands, and cultivated fields. Perches on ground or on stumps or posts.

PEREGRINE FALCON  
FALCO PEREGRINUS

FEDERAL STATUS: LE  
STATE STATUS: LE COUNTY  
OCCURRENCE: Y

HABITAT COMMENTS

"A variety of open situations from tundra, moorlands, steppe and seacoasts, especially where there are suitable nesting cliffs, to high mountains, more open forested regions, and even human population centers..."

PIED-BILLED GREBE  
PODILYMBUS PODICEPS

FEDERAL STATUS: COUNTY  
STATE STATUS: LE OCCURRENCE: ?

HABITAT COMMENTS

Lakes, ponds, sluggish streams, and marshes; in migration and in winter also in brackish bays and estuaries.

PINE BARRENS TREEFROG  
HYLA ANDERSONII

FEDERAL STATUS: C2 COUNTY  
STATE STATUS: LE OCCURRENCE: ?

HABITAT COMMENTS

Streams, ponds, cranberry bogs, and other wetland habitats. Post-breeding habitat the surrounding woodlands.

5\18\87

SAVANNAH SPARROW  
PASSERCULUS SANDWICHENSIS

FEDERAL STATUS:  
STATE STATUS: LT.

COUNTY  
OCCURRENCE: W\*

HABITAT COMMENTS

"Open areas, especially grasslands, tundra, meadows, bogs, farmlands, grassy areas with scattered bushes, and marshes, including salt marshes in the BELDINGI and ROSTRATUS groups (Subtropical and Temperate zones)".

SHORT-EARED OWL  
ASIO FLAMMEUS

FEDERAL STATUS:  
STATE STATUS: LE/S

COUNTY  
OCCURRENCE: W\*

HABITAT COMMENTS

Open country, including prairie, meadows, tundra, moorlands, marshes, savanna, dunes, fields, and open woodland. Roosts by day on ground or on low open perches.

UPLAND SANDPIPER  
BARTRAMIA LONGICAUDA

FEDERAL STATUS:  
STATE STATUS: LE

COUNTY  
OCCURRENCE: B

HABITAT COMMENTS

Grasslands, especially prairies, dry meadows, pastures, and (in Alaska) scattered woodlands at timberline; very rarely in migration along shores and mudflats.

WOOD TURTLE  
CLEMMYS INSCULPTA

FEDERAL STATUS:  
STATE STATUS: LT

COUNTY  
OCCURRENCE: Y

HABITAT COMMENTS

Vicinity of streams and rivers. In streams and in wooded areas and fields adjacent to streams in summer. In streams in spring and fall. Hibernates in banks or bottoms of streams in winter.

DEFINITION OF ACRONYMS

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FEDERAL STATUS

LE=listed endangered.  
LT=listed threatened.  
PE=proposed endangered.  
PT=proposed threatened.  
C2=candidate for listing.

STATE STATUS

LE=listed as endangered. (short-eared owl winter pop. listed as stable:S)  
LT=listed as threatened.

COUNTY OCCURRENCE

Y=present year-round, breeds.  
N=present year-round, not recorded breeding.  
B=present during the summer, breeds.  
W=present during the winter.  
T=present as a transient.  
?=present status undetermined.  
\*=indicates that the county is within the species known breeding range.



5/22/87

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NEW JERSEY NATURAL HERITAGE PROGRAM  
POTENTIAL THREATENED AND ENDANGERED VERTEBRATE SPECIES  
IN SOMERSET COUNTY

AMERICAN BITTERN  
BOTAURUS LENTIGINOSUS

FEDERAL STATUS:  
STATE STATUS: LT

COUNTY  
OCCURRENCE: ?

HABITAT COMMENTS

Fresh water bogs, swamps, wet fields, cattail and bulrush marshes, brackish and saltwater marshes and meadows.

BARRED OWL  
STRIX VARIA

FEDERAL STATUS:  
STATE STATUS: LT

COUNTY  
OCCURRENCE: Y ✓

HABITAT COMMENTS

Dense woodland and forest (conif. or hardwood), swamps, wooded river valleys, cabbage palm-live oak hammocks, especially where bordering streams, marshes, and meadows.

BLUE-SPOTTED SALAMANDER  
AMBYSTOMA LATERALE

FEDERAL STATUS:  
STATE STATUS: LE

COUNTY  
OCCURRENCE: Y ✓

HABITAT COMMENTS

Sometimes in overgrown pastures. Sometimes hibernates under rocks or logs near breeding pools. Often found in areas with sandy soil. Adults usually under objects or underground.

BOBOLINK  
DOLICHONYX ORYZIVORUS

FEDERAL STATUS:  
STATE STATUS: LT

COUNTY  
OCCURRENCE: B

HABITAT COMMENTS

Tall grass areas, flooded meadows, prairie, deep cultivated grains, alfalfa and clover fields. In migration and winter also in rice fields, marshes, and open woody areas.

BOG TURTLE  
CLEMMYS MUHLENBERGII

FEDERAL STATUS: C2  
STATE STATUS: LE

COUNTY  
OCCURRENCE: Y

HABITAT COMMENTS

Slow, shallow rivulets of sphagnum bogs, swamps, and marshy meadows; sea level to 1200 m in Appalachians. Commonly basks on tussocks in morning in spring and early summer. Hibernates in subterreanean rivulet or seepage area.

5/22/87

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BROOK TROUT  
SALVELINUS FONTINALIS

FEDERAL STATUS:  
STATE STATUS: LT

COUNTY  
OCCURRENCE: Y

HABITAT COMMENTS

Clear cool well-oxygenated streams and lakes. May move from streams into lakes or sea to avoid high temps. in summer.

COOPER'S HAWK  
ACCIPITER COOPERII

FEDERAL STATUS:  
STATE STATUS: LE

COUNTY  
OCCURRENCE: W\*

HABITAT COMMENTS

Primarily mature forest, either broadleaf or coniferous, mostly the former; also open woodland and forest edge.

GRASSHOPPER SPARROW  
AMMODRAMUS SAVANNARUM

FEDERAL STATUS:  
STATE STATUS: LT

COUNTY  
OCCURRENCE: B

HABITAT COMMENTS

Prairie, old fields, open grasslands, cultivated fields, savanna.

GREAT BLUE HERON  
ARDEA HERODIAS

FEDERAL STATUS:  
STATE STATUS: LT

COUNTY  
OCCURRENCE: N\*

HABITAT COMMENTS

Freshwater and brackish marshes, along lakes, rivers, bays, lagoons, ocean beaches, mangroves, fields, and meadows.

HENSLOW'S SPARROW  
AMMODRAMUS HENSLOWII

FEDERAL STATUS:  
STATE STATUS: LE

COUNTY  
OCCURRENCE: ?

HABITAT COMMENTS

Open fields and meadows with grass interspersed with weeds or shrubby vegetation, especially in damp or low-lying areas. In migration and winter also in grassy areas adjacent to pine woods or second-growth woodland.

LONGTAIL SALAMANDER  
EURYCEA LONGICAUDA

FEDERAL STATUS:  
STATE STATUS: LT

COUNTY  
OCCURRENCE: Y

HABITAT COMMENTS

Streambanks, spring runs, cave mouths, forested floodplains in South. May disperse into wooded terrestrial habitats in wet weather. Hides under rocks, logs, and other debris.

PIED-BILLED GREBE  
PODILYMBUS PODICEPS

FEDERAL STATUS:  
STATE STATUS: LE

COUNTY  
OCCURRENCE: ?

HABITAT COMMENTS

Lakes, ponds, sluggish streams, and marshes; in migration and in winter also in brackish bays and estuaries.

5\22\87

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RED-SHOULDERED HAWK  
BUTEO LINEATUS

FEDERAL STATUS:  
STATE STATUS: LT.

COUNTY  
OCCURRENCE: Y

HABITAT COMMENTS

Moist and riverine forest, and in e. N. Am. in wooded swamps, foraging in forest edge and open woodland.

SAVANNAH SPARROW  
PASSERCULUS SANDWICHENSIS

FEDERAL STATUS:  
STATE STATUS: LT

COUNTY  
OCCURRENCE: Y

HABITAT COMMENTS

"Open areas, especially grasslands, tundra, meadows, bogs, farmlands, grassy areas with scattered bushes, and marshes, including salt marshes in the BELDINGI and ROSTRATUS groups (Subtropical and Temperate zones)".

TREMBLAY'S SALAMANDER  
AMBYSTOMA TREMBLAYI

FEDERAL STATUS:  
STATE STATUS: LE

COUNTY  
OCCURRENCE: ?

HABITAT COMMENTS

Habitat requirements similar to the blue-spotted salamander AMBYSTOMA LATERALE.

UPLAND SANDPIPER  
BARTRAMIA LONGICAUDA

FEDERAL STATUS:  
STATE STATUS: LE

COUNTY  
OCCURRENCE: B

HABITAT COMMENTS

Grasslands, especially prairies, dry meadows, pastures, and (in Alaska) scattered woodlands at timberline; very rarely in migration along shores and mudflats.

VESPER SPARROW  
POOECETES GRAMINEUS

FEDERAL STATUS:  
STATE STATUS: LE

COUNTY  
OCCURRENCE: Y

HABITAT COMMENTS

"Plains, prairie, dry shrublands, savanna, weedy pastures, fields, sagebrush, arid scrub and woodland clearings".

WOOD TURTLE  
CLEMMYS INSCULPTA

FEDERAL STATUS:  
STATE STATUS: LT

COUNTY  
OCCURRENCE: Y

HABITAT COMMENTS

Vicinity of streams and rivers. In streams and in wooded areas and fields adjacent to streams in summer. In streams in spring and fall. Hibernates in banks or bottoms of streams in winter.

## DEFINITION OF ACRONYMS

### FEDERAL STATUS

LE=listed endangered.  
LT=listed threatened.  
PE=proposed endangered.  
PT=proposed threatened.  
C2=candidate for listing.

### STATE STATUS

LE=listed as endangered. (short-eared owl winter pop. listed as stable:S)  
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### COUNTY OCCURRENCE

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N=present year-round, not recorded breeding.  
B=present during the summer, breeds.  
W=present during the winter.  
T=present as a transient.  
?=present status undetermined.  
\*=indicates that the county is within the species known breeding range.

31 JUL 1992

MIDDLESEX COUNTY  
RARE SPECIES AND NATURAL COMMUNITIES PRESENTLY RECORDED IN  
THE NEW JERSEY NATURAL HERITAGE DATABASE

NAME	COMMON NAME	FEDERAL STATUS	STATE STATUS	REGIONAL STATUS	GRANK	SRANK	DATE OBSERVED	IDENT.
*** Vertebrates								
AMMODRAMUS HENSLOWII	- HENSLOW'S SPARROW		E		G4	S1	1952-??-??	
AMMODRAMUS HENSLOWII	- HENSLOW'S SPARROW		E		G4	S1	1963-??-??	Y
AMMODRAMUS SAVANNARUM	- GRASSHOPPER SPARROW		T/T		G4	S2	1989-07-25	Y
BARTRAMIA LONGICAUDA	- UPLAND SANDPIPER		E		G5	S1	1955-??-??	Y
BARTRAMIA LONGICAUDA	- UPLAND SANDPIPER		E		G5	S1	1976-??-??	Y
CIRCUS CYANEUS	NORTHERN HARRIER		E/U		G5	S2	1986-SUMMR	Y
CIRCUS CYANEUS	NORTHERN HARRIER		E/U		G5	S2	1988-08-23	
CLEMMYS INSCULPTA	- WOOD TURTLE		T		G5	S3	1986-SUMMR	Y
CLEMMYS INSCULPTA	- WOOD TURTLE		T		G5	S3	1974-08-??	Y
CLEMMYS INSCULPTA	- WOOD TURTLE		T		G5	S3	1986-SUMMR	Y
CLEMMYS INSCULPTA	WOOD TURTLE		T		G5	S3	1983-05-24	
CLEMMYS MUHLENBERGII	- BOG TURTLE	C2	E		G3	S2	1909-05-??	Y
FALCO PEREGRINUS	PEREGRINE FALCON	E/SA	E		G3	S1	1984-09-30	Y
FALCO PEREGRINUS	PEREGRINE FALCON	E/SA	E		G3	S1	1986-SUMMR	Y
HYLA ANDERSONII	PINE BARRENS TREEFROG	3C	E		G4	S3	1958-??-??	Y
HYLA ANDERSONII	PINE BARRENS TREEFROG	3C	E		G4	S3	????-??-??	Y
HYLA ANDERSONII	PINE BARRENS TREEFROG	3C	E		G4	S3	????-??-??	Y
HYLA ANDERSONII	PINE BARRENS TREEFROG	3C	E		G4	S3	????-??-??	Y
HYLA ANDERSONII	PINE BARRENS TREEFROG	3C	E		G4	S3	????-??-??	Y
HYLA ANDERSONII	PINE BARRENS TREEFROG	3C	E		G4	S3	????-??-??	Y
LANIUS LUDOVICIANUS MIGRANS	LOGGERHEAD SHRIKE	C2	E		G4T2	S1	1991-08-21	Y
NYCTANASSA VIOLACEUS	YELLOW-CROWNED NIGHT-HERON		T/T		G5	S2	1986-05-29	
** Vascular plants								
ASTER RADULA	LOW ROUGH ASTER		E		G5	S1	1987-??-??	Y
ASTER RADULA	LOW ROUGH ASTER		E		G5	S1	1980's	Y
BIDENS BIDENTOIDES	BUR-MARIGOLD	3C			G3	S2	1918-10-??	Y

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MIDDLESEX COUNTY  
RARE SPECIES AND NATURAL COMMUNITIES PRESENTLY RECORDED IN  
THE NEW JERSEY NATURAL HERITAGE DATABASE

NAME	COMMON NAME	FEDERAL STATUS	STATE STATUS	REGIONAL STATUS	GRANK	SRANK	DATE OBSERVED	IDENT.
CALAMOVILFA BREVIPILIS	PINE BARREN REEDGRASS	3C		LP	G3	S3	1940-09-29	Y
CAREX BARRATTII	BARRATT'S SEDGE	3C		LP	G3	S3	1916-05-14	Y
CAREX BARRATTII	BARRATT'S SEDGE	3C		LP	G3	S3	1890-05-03	Y
CAREX BARRATTII	BARRATT'S SEDGE	3C		LP	G3	S3	1916-05-14	Y
CAREX BARRATTII	BARRATT'S SEDGE	3C		LP	G3	S3	1941-11-27	Y
CAREX BARRATTII	BARRATT'S SEDGE	3C		LP	G3	S3	1938-04-24	Y
CAREX POLYMORPHA	VARIABLE SEDGE	C2	E		G2	S1	1915-06-30	Y
CAREX POLYMORPHA	VARIABLE SEDGE	C2	E		G2	S1	1908-05-07	Y
CAREX ROSTRATA	BEAKED SEDGE				G5	S2	1961-10-01	Y
CAREX ROSTRATA	BEAKED SEDGE				G5	S2	1913-06-28	?
CYPERUS LANCASTRIENSIS	LANCASTER FLATSEDE		E		G5	S2	1983-08-25	Y
DRABA REPTANS	CAROLINA WHITLOW-GRASS		E		G5	SH	1888-04-29	Y
HELONIAS BULLATA	SWAMP-PINK	LT	E	LP	G3	S3	1946-05-08	Y
HELONIAS BULLATA	SWAMP-PINK	LT	E	LP	G3	S3	1983-05-01	Y
HELONIAS BULLATA	SWAMP-PINK	LT	E	LP	G3	S3	1892-06-??	Y
LIATRIS SCARIOA VAR	NORTHERN BLAZING STAR	C2	E		G5TU	SH	1940-09-29	Y
NOVAE-ANGLIAE								
MELANTHIUM VIRGINICUM	VIRGINIA BUNCHFLOWER		E		G5	S1	1889-09-21	Y
MELANTHIUM VIRGINICUM	VIRGINIA BUNCHFLOWER		E		G5	S1	????-??-??	Y
MICRANTHEMUM MICRANTHEMOIDES	NUTTALL'S MUDWORT	C1*	E		GH	SH	1918-10-??	Y
MYRIOPHYLLUM VERTICILLATUM	WHORLED WATER-MILFOIL		E		G5	SH	1935-03-28	Y
PHORADENDRON SEROTINUM	MISTLETOE			LP	G5	S2	1932-04-27	Y
PLATANHERA FLAVA VAR FLAVA	SOUTHERN REIN ORCHID	3C	E		G4T3?	S1	1916-08-06	Y
POLYGALA POLYGAMA	RACEMED MILKWORT				G5	S2	1987-??-??	Y
POLYGONUM GLAUCUM	SEA-BEACH KNOTWEED		E		G3	S1	1906-10-07	Y
POLYGONUM GLAUCUM	SEA-BEACH KNOTWEED		E		G3	S1	1883-09-14	Y
POTAMOGETON VASEYI	VASEY'S PONDWEED				G4	SH.1	1921-09-26	Y
RANUNCULUS PUSILLUS	LOW SPEARWORT				G5	S2	1982-06-04	Y

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JUL 1992

MIDDLESEX COUNTY  
RARE SPECIES AND NATURAL COMMUNITIES PRESENTLY RECORDED IN  
THE NEW JERSEY NATURAL HERITAGE DATABASE

NAME	COMMON NAME	FEDERAL STATUS	STATE STATUS	REGIONAL STATUS	GRANK	SRANK	DATE OBSERVED	IDENT.
RIBES CYNOSBATI	PRICKLY GOOSEBERRY				G5	SR	1890-04-25	?
SAGITTARIA AUSTRALIS	SOUTHERN ARROW HEAD		E		G5	S1	1918-08-05	Y
SAGITTARIA AUSTRALIS	SOUTHERN ARROW HEAD		E		G5	S1	1907-09-??	Y
SAGITTARIA AUSTRALIS	SOUTHERN ARROW HEAD		E		G5	S1	1916-09-01	Y
SAGITTARIA SPATULATA	TIDAL ARROWHEAD				G5T4	S3	1987-??-??	Y
SCIRPUS MARITIMUS	SALT MARSH BULRUSH		E		G5	SH	1971-08-08	Y
SCUTELLARIA LEONARDII	SMALL SKULLCAP		E		G4	S1	1896-05-30	Y
SOLIDAGO ELLIOTTII	ELLIOTT'S GOLDENROD				G5	S3	1980-09-??	Y
TRIGLOCHIN MARITIMUM	SEA-SIDE ARROW-GRASS		E		G5	S1	1945-05-20	Y
UTRICULARIA PURPUREA	PURPLE BLADDERWORT			LP	G5	S3	1987-??-??	Y
VERBENA SIMPLEX	NARROW-LEAVED VERVAIN		E		G5	SH	1867-08-12	Y
VERBENA SIMPLEX	NARROW-LEAVED VERVAIN		E		G5	SH	1950-07-04	Y
VICIA AMERICANA	AMERICAN PURPLE VETCH				G5	S2	1916-06-18	Y
VICIA AMERICANA	AMERICAN PURPLE VETCH				G5	S2	1906-05-20	Y
ZIGADENUS LEIMANTHOIDES	OCEANORUS		E		G4Q	S1	1985-??-??	Y

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31 JUL 1992

SOMERSET COUNTY  
RARE SPECIES AND NATURAL COMMUNITIES PRESENTLY RECORDED IN  
THE NEW JERSEY NATURAL HERITAGE DATABASE.

NAME	COMMON NAME	FEDERAL STATUS	STATE STATUS	REGIONAL STATUS	GRANK	SRANK	DATE OBSERVED	IDENT.
** Vertebrates								
ACCIPITER COOPERII	COOPER'S HAWK	E			G4	S2	1990-07-06	Y
AMBYSTOMA LATERALE	BLUE-SPOTTED SALAMANDER	E			G5	S1	1989-10-26	Y
AMMODRAMUS HENSLOWII	HENSLOW'S SPARROW	E			G4	S1	1963-??-??	Y
AMMODRAMUS SAVANNARUM	GRASSHOPPER SPARROW	T/T			G4	S2	1981-??-??	Y
AMMODRAMUS SAVANNARUM	GRASSHOPPER SPARROW	T/T			G4	S2	1985-SUMMR	Y
AMMODRAMUS SAVANNARUM	GRASSHOPPER SPARROW	T/T			G4	S2	1987-06-30	Y
AMMODRAMUS SAVANNARUM	GRASSHOPPER SPARROW	T/T			G4	S2	1988-07-??	Y
AMMODRAMUS SAVANNARUM	GRASSHOPPER SPARROW	T/T			G4	S2	1982-SUMMR	Y
AMMODRAMUS SAVANNARUM	GRASSHOPPER SPARROW	T/T			G4	S2	1981-SUMMR	Y
AMMODRAMUS SAVANNARUM	GRASSHOPPER SPARROW	T/T			G4	S2	1981-SUMMR	Y
AMMODRAMUS SAVANNARUM	GRASSHOPPER SPARROW	T/T			G4	S2	1988-06-??	Y
AMMODRAMUS SAVANNARUM	GRASSHOPPER SPARROW	T/T			G4	S2	1981-SUMMR	Y
AMMODRAMUS SAVANNARUM	GRASSHOPPER SPARROW	T/T			G4	S2	1990-07-04	Y
AMMODRAMUS SAVANNARUM	GRASSHOPPER SPARROW	T/T			G4	S2	1981-SUMMR	Y
AMMODRAMUS SAVANNARUM	GRASSHOPPER SPARROW	T/T			G4	S2	1981-SUMMR	Y
AMMODRAMUS SAVANNARUM	GRASSHOPPER SPARROW	T/T			G4	S2	1981-SUMMR	Y
AMMODRAMUS SAVANNARUM	GRASSHOPPER SPARROW	T/T			G4	S2	1988-07-??	Y
AMMODRAMUS SAVANNARUM	GRASSHOPPER SPARROW	T/T			G4	S2	1988-07-??	Y
AMMODRAMUS SAVANNARUM	GRASSHOPPER SPARROW	T/T			G4	S2	1988-08-??	Y
AMMODRAMUS SAVANNARUM	GRASSHOPPER SPARROW	T/T			G4	S2	1989-05-??	Y
ARDEA HERODIAS	GREAT BLUE HERON	T/S			G5	S2	1984-??-??	Y
ARDEA HERODIAS	GREAT BLUE HERON	T/S			G5	S2	1990-05-??	Y
ARDEA HERODIAS	GREAT BLUE HERON	T/S			G5	S2	1991-04-28	Y
BARTRAMIA LONGICAUDA	UPLAND SANDPIPER	E			G5	S1	1987-06-20	Y
BARTRAMIA LONGICAUDA	UPLAND SANDPIPER	E			G5	S1	1950-??-??	Y
BARTRAMIA LONGICAUDA	UPLAND SANDPIPER	E			G5	S1	1950-??-??	Y
BARTRAMIA LONGICAUDA	UPLAND SANDPIPER	E			G5	S1	1975-??-??	Y
BARTRAMIA LONGICAUDA	UPLAND SANDPIPER	E			G5	S1	1980-??-??	Y

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JUL 1992

SOMERSET COUNTY  
RARE SPECIES AND NATURAL COMMUNITIES PRESENTLY RECORDED IN  
THE NEW JERSEY NATURAL HERITAGE DATABASE

NAME	COMMON NAME	FEDERAL STATUS	STATE STATUS	REGIONAL STATUS	GRANK	SRANK	DATE OBSERVED	IDENT.
BARTRAMIA LONGICAUDA	UPLAND SANDPIPER		E		G5	S1	1982-??-??	Y
BUTEO LINEATUS	RED-SHOULDERED HAWK		E/T		G5	S2	1988-SPRING	Y
CLEMMYS INSCULPTA	WOOD TURTLE		T		G5	S3	1991-04-24	Y
CLEMMYS INSCULPTA	WOOD TURTLE		T		G5	S3	1983-05-24	Y
CLEMMYS INSCULPTA	WOOD TURTLE		T		G5	S3	1983-08-02	
CLEMMYS INSCULPTA	WOOD TURTLE		T		G5	S3	1990-03-13	Y
CLEMMYS INSCULPTA	WOOD TURTLE		T		G5	S3	1986-SUMMR	Y
CLEMMYS INSCULPTA	WOOD TURTLE		T		G5	S3	1985-06-09	
CLEMMYS INSCULPTA	WOOD TURTLE		T		G5	S3	1983-07-29	Y
CLEMMYS INSCULPTA	WOOD TURTLE		T		G5	S3	1981-??-??	Y
CLEMMYS INSCULPTA	WOOD TURTLE		T		G5	S3	1987-03-26	Y
CLEMMYS INSCULPTA	WOOD TURTLE		T		G5	S3	1990-05-01	Y
CLEMMYS INSCULPTA	WOOD TURTLE		T		G5	S3	1989-05-26	Y
CLEMMYS INSCULPTA	WOOD TURTLE		T		G5	S3	1986-SPRNG	Y
CLEMMYS INSCULPTA	WOOD TURTLE		T		G5	S3	1990-07-06	Y
CLEMMYS INSCULPTA	WOOD TURTLE		T		G5	S3	1990-10-12	Y
CLEMMYS INSCULPTA	WOOD TURTLE		T		G5	S3	1990-10-11	Y
CLEMMYS MUHLENBERGII	BOG TURTLE	C2	E		G3	S2	1965-??-??	Y
CLEMMYS MUHLENBERGII	BOG TURTLE	C2	E		G3	S2	????-??-??	Y
CLEMMYS MUHLENBERGII	BOG TURTLE	C2	E		G3	S2	1910-06-13	Y
CLEMMYS MUHLENBERGII	BOG TURTLE	C2	E		G3	S2	1987-06-??	Y
CLEMMYS MUHLENBERGII	BOG TURTLE	C2	E		G3	S2	1982-06-??	Y
DOLICHONYX ORYZIVORUS	BOBOLINK		T/T		G5	S2	1987-SUMMR	Y
DOLICHONYX ORYZIVORUS	BOBOLINK		T/T		G5	S2	1988-??-??	Y
DOLICHONYX ORYZIVORUS	BOBOLINK		T/T		G5	S2	1987-SUMMR	Y
DOLICHONYX ORYZIVORUS	BOBOLINK		T/T		G5	S2	1988-06-??	Y
DOLICHONYX ORYZIVORUS	BOBOLINK		T/T		G5	S2	1987-SUMMR	Y
DOLICHONYX ORYZIVORUS	BOBOLINK		T/T		G5	S2	1988-??-??	Y
DOLICHONYX ORYZIVORUS	BOBOLINK		T/T		G5	S2	1988-06-??	Y

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SOMERSET COUNTY  
RARE SPECIES AND NATURAL COMMUNITIES PRESENTLY RECORDED IN  
THE NEW JERSEY NATURAL HERITAGE DATABASE

NAME	COMMON NAME	FEDERAL STATUS	STATE STATUS	REGIONAL STATUS	GRANK	SRANK	DATE OBSERVED	IDENT.
DOLICHONYX ORYZIVORUS	BOBOLINK		T/T		G5	S2	1987-SUMMR	Y
DOLICHONYX ORYZIVORUS	BOBOLINK		T/T		G5	S2	1987-SUMMR	Y
DOLICHONYX ORYZIVORUS	BOBOLINK		T/T		G5	S2	1987-SUMMR	Y
DOLICHONYX ORYZIVORUS	BOBOLINK		T/T		G5	S2	1987-SUMMR	Y
DOLICHONYX ORYZIVORUS	BOBOLINK		T/T		G5	S2	1988-??-??	Y
DOLICHONYX ORYZIVORUS	BOBOLINK		T/T		G5	S2	1988-07-??	Y
DOLICHONYX ORYZIVORUS	BOBOLINK		T/T		G5	S2	1988-06-??	Y
DOLICHONYX ORYZIVORUS	BOBOLINK		T/T		G5	S2	1987-06-??	Y
DOLICHONYX ORYZIVORUS	BOBOLINK		T/T		G5	S2	1988-06-??	Y
DOLICHONYX ORYZIVORUS	BOBOLINK		T/T		G5	S2	1988-06-??	Y
DOLICHONYX ORYZIVORUS	BOBOLINK		T/T		G5	S2	1990-SUMMER	Y
DOLICHONYX ORYZIVORUS	BOBOLINK		T/T		G5	S2	1985-SUMMR	Y
DOLICHONYX ORYZIVORUS	BOBOLINK		T/T		G5	S2	1985-SUMMR	Y
DOLICHONYX ORYZIVORUS	BOBOLINK		T/T		G5	S2	1982-SUMMR	Y
DOLICHONYX ORYZIVORUS	BOBOLINK		T/T		G5	S2	1985-SUMMR	Y
DOLICHONYX ORYZIVORUS	BOBOLINK		T/T		G5	S2	1982-SUMMR	Y
DOLICHONYX ORYZIVORUS	BOBOLINK		T/T		G5	S2	1982-SUMMR	Y
DOLICHONYX ORYZIVORUS	BOBOLINK		T/T		G5	S2	1988-06-??	Y
DOLICHONYX ORYZIVORUS	BOBOLINK		T/T		G5	S2	1990-07-20	Y
DOLICHONYX ORYZIVORUS	BOBOLINK		T/T		G5	S2	1990-06-05	Y
EURYCEA LONGICAUDA	LONGTAIL SALAMANDER		T		G5	S2	1977-??-??	Y
EURYCEA LONGICAUDA	LONGTAIL SALAMANDER		T		G5	S2	1967-06-11	Y
EURYCEA LONGICAUDA	LONGTAIL SALAMANDER		T		G5	S2	1979-06-20	Y
HIRUNDO PYRRHONOTA	CLIFF SWALLOW		T		G5	S2	1989-07-06	Y
MELANERPES ERYTHROCEPHALUS	RED-HEADED WOODPECKER		T/T		G5	S3	1990-04-18	
PASSERCULUS SANDWICHENSIS	SAVANNAH SPARROW		T/T		G5	S2	1990-07-20	Y
PASSERCULUS SANDWICHENSIS	SAVANNAH SPARROW		T/T		G5	S2	1981-??-??	Y
PASSERCULUS SANDWICHENSIS	SAVANNAH SPARROW		T/T		G5	S2	1980-??-??	Y
PASSERCULUS SANDWICHENSIS	SAVANNAH SPARROW		T/T		G5	S2	1987-07-03	Y
PASSERCULUS SANDWICHENSIS	SAVANNAH SPARROW		T/T		G5	S2	1965-??-??	Y

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SOMERSET COUNTY  
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NAME	COMMON NAME	FEDERAL STATUS	STATE STATUS	REGIONAL STATUS	GRANK	SRANK	DATE OBSERVED	IDENT.
POOECETES GRAMINEUS	VESPER SPARROW		E		G5	S2	1981-??-??	Y
POOECETES GRAMINEUS	VESPER SPARROW		E		G5	S2	1987-05-14	Y
POOECETES GRAMINEUS	VESPER SPARROW		E		G5	S2	1981-??-??	Y
POOECETES GRAMINEUS	VESPER SPARROW		E		G5	S2	1982-??-??	Y
POOECETES GRAMINEUS	VESPER SPARROW		E		G5	S2	1981-??-??	Y
POOECETES GRAMINEUS	VESPER SPARROW		E		G5	S2	1980-??-??	Y
POOECETES GRAMINEUS	VESPER SPARROW		E		G5	S2	1980-??-??	Y
POOECETES GRAMINEUS	VESPER SPARROW		E		G5	S2	1970-??-??	Y
POOECETES GRAMINEUS	VESPER SPARROW		E		G5	S2	1982-??-??	Y
POOECETES GRAMINEUS	VESPER SPARROW		E		G5	S2	1987-07-??	Y
STRIX VARIA	BARRED OWL		T/T		G5	S3	1986-05-??	Y
STRIX VARIA	BARRED OWL		T/T		G5	S3	1990-05-??	Y
STRIX VARIA	BARRED OWL		T/T		G5	S3	1989-04-26	Y

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\* Ecosystems

CAVE AQUATIC COMMUNITY	CAVE AQUATIC COMMUNITY				G4?	S2	19??-??-??	Y
CAVE AQUATIC COMMUNITY	CAVE AQUATIC COMMUNITY				G4?	S2	190?-??-??	Y
CAVE TERRESTRIAL COMMUNITY	CAVE TERRESTRIAL COMMUNITY				G4?	S3	19??-??-??	Y
CAVE TERRESTRIAL COMMUNITY	CAVE TERRESTRIAL COMMUNITY				G4?	S3	190?-??-??	Y
FLOODPLAIN FOREST	FLOODPLAIN FOREST				G4	S3?	1988-04-13	Y
FLOODPLAIN FOREST	FLOODPLAIN FOREST				G4	S3?	1986-??-??	Y
TRAPROCK GLADE/ROCK OUTCROP COMMUNITY	TRAPROCK GLADE/ROCK OUTCROP COMMUNITY				G3?	S1?	1985-06-11	

\* Other types

PRIMEVAL FOREST	PRIMEVAL FOREST				G3?	S1	1984-??-??	Y
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\* Vascular plants

ALISMA TRIVIALE	LARGE WATER-PLANTAIN		E		G5T5	S1	1932-08-05	Y
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SOMERSET COUNTY  
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NAME	COMMON NAME	FEDERAL STATUS	STATE STATUS	REGIONAL STATUS	GRANK	SRANK	DATE OBSERVED	IDENT.
ASTER INFIRMUS	CORNEL-LEAVED ASTER				G5	S2	1987-??-??	Y
ASTER PRAEALTUS	WILLOW-LEAVED ASTER		E		G5	S1	1982-10-10	Y
BOTRYCHUM ONEIDENSE	BLUNT-LOBED GRAPE-FERN				G3?	S2	1973-04-14	Y
BOUTELOUA CURTIPENDULA	SIDE-OATS GRAMMA GRASS		E		G5	S1	1987-10-??	Y
CALYSTEGIA SPITHAMAEA	ERECT BINDWEED		E		G4G5	S1	1946-06-10	Y
CAREX FRANKII	FRANK'S SEDGE				G5	S2	1976-06-14	Y
CAREX FRANKII	FRANK'S SEDGE				G5	S2	1954-08-04	Y
CAREX WILLDENOWII	WILLDENOW'S SEDGE				G5	S2	1985-06-11	Y
CERCIS CANADENSIS	REDBUD		E		G5	S1	1990-04-??	Y
CHEILANTHES LANOSA	HAIRY LIPFERN				G5	S2	1967-??-??	Y
CYNOGLOSSUM VIRGINIANUM VAR VIRGINIANUM	WILD COMFREY				G5	S2	1980'S-05	Y
CYNOGLOSSUM VIRGINIANUM VAR VIRGINIANUM	WILD COMFREY				G5	S2	1990-04-??	Y
ELEOCHARIS TENUIS VAR VERRUCOSA	SPIKERUSH		E		G3G5Q	S1.1	1985-06-??	Y
MELANTHIUM VIRGINICUM	VIRGINIA BUNCHFLOWER		E		G5	S1	1916-08-26	Y
MUHLENBERGIA CAPILLARIS	LONG-AWNED SMOKE GRASS		E		G5	S1	1918-09-29	Y
PHLOX PILOSA	DOWNY PHLOX		E		G5	SH	1918-05-19	Y
PHLOX PILOSA	DOWNY PHLOX		E		G5	SH	1934-05-30	Y
PHLOX PILOSA	DOWNY PHLOX		E		G5	SH	1938-05-08	Y
PHLOX PILOSA	DOWNY PHLOX		E		G5	SH	1878-??-??	Y
PLANTAGO PUSILLA	SLENDER PLANTAIN		E		G5	SH	1940-06-06	?
POTAMOGETON ROBBINSII	ROBBIN'S PONDWEED		E		G5	S1	1916-09-01	Y
PTILEA TRIFOLIATA	WAFFER ASH		E		G5	S1	1986-07-07	Y
RUDBECKIA FULGIDA	ORANGE CONEFLOWER		E		G5	S1	1946-09-29	Y
RUDBECKIA FULGIDA	ORANGE CONEFLOWER		E		G5	S1	1889-09-22	Y
SAGITTARIA AUSTRALIS	SOUTHERN ARROW HEAD		E		G5	S1	1916-09-23	Y
SANICULA TRIFOLIATA	LARGE-FRUITED SANICLE		E		G4	S1	1918-07-28	Y

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NAME	COMMON NAME	FEDERAL STATUS	STATE STATUS	REGIONAL STATUS	GRANK	SRANK	DATE OBSERVED	IDENT.
SANICULA TRIFOLIATA	LARGE-FRUITED SANICLE		E		G4	S1	1987-??-??	Y
SCUTELLARIA LEONARDII	SMALL SKULLCAP		E		G4	S1	1985-11-??	Y
SELAGINELLA RUPESTRIS	LEDGE SPIKE-MOSS				G5	S2	1987-??-??	Y
SPIRANTHES LACINIATA	LACE-LIP LADIES'-TRESSES		E		G4G5	S1	1918-08-04	?
SPOROBOLUS NEGLECTUS	PUFF-SHEATHED DROPSEED		E		G5	S1	1918-09-??	Y
SPOROBOLUS NEGLECTUS	PUFF-SHEATHED DROPSEED		E		G5	S1	1927-08-04	Y
STACHYS PALUSTRIS VAR HOMOTRICA	MARSH HEDGE-NETTLE		E		G5T?	SH	1945-06-24	Y
TRIOSTEUM ANGUSTIFOLIUM	NARROW-LEAVED TINKER'S-WEED		E		G5	S1	1925-06-10	Y
TRIOSTEUM ANGUSTIFOLIUM	NARROW-LEAVED TINKER'S-WEED		E		G5	S1	1892-06-??	Y
TRIOSTEUM ANGUSTIFOLIUM	NARROW-LEAVED TINKER'S-WEED		E		G5	S1	1892-08-04	Y
TRIOSTEUM ANGUSTIFOLIUM	NARROW-LEAVED TINKER'S-WEED		E		G5	S1	1980'S-??-??	Y

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45 Records Processed

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## EXPLANATIONS OF CODES USED IN NATURAL HERITAGE REPORTS

### FEDERAL STATUS CODES

The following U.S. Fish and Wildlife Service categories and their definitions of endangered and threatened plants and animals have been modified from the U.S. Fish and Wildlife Service (F.R. Vol. 50 No. 188; Vol. 55, No. 35; F.R. 50 CFR 17.11 and 17.12). Federal Status codes reported for species follow the most recent listing.

- LE Taxa formally listed as endangered.
- LT Taxa formally listed as threatened.
- PE Taxa already proposed to be formally listed as endangered.
- PT Taxa already proposed to be formally listed as threatened.
- C1 Taxa for which the Service currently has on file substantial information on biological vulnerability and threat(s) to support the appropriateness of proposing to list them as endangered or threatened species.
- C1\* Taxa which may be possibly extinct (although persuasive documentation of extinction has not been made--compare to 3A status).
- C2 Taxa for which information now in possession of the Service indicates that proposing to list them as endangered or threatened species is possibly appropriate, but for which substantial data on biological vulnerability and threat(s) are not currently known or on file to support the immediate preparation of rules.
- C3 Taxa that are no longer being considered for listing as threatened or endangered species. Such taxa are further coded to indicate three subcategories, depending on the reason(s) for removal from consideration.
- 3A Taxa for which the Service has persuasive evidence of extinction.
- 3B Names that, on the basis of current taxonomic understanding, do not represent taxa meeting the Act's definition of "species".
- 3C Taxa that have proven to be more abundant or widespread than was previously believed

and/or those that are not subject to any identifiable threat.

S/A Similarity of appearance species.

## STATE STATUS CODES

Two animal lists provide state status codes after the Endangered and Nongame Species Conservation Act of 1973 (NSSA 23:2A-13 et. seq.): the list of endangered species (N.J.A.C. 7:25-4.13) and the list defining status of indigenous, nongame wildlife species of New Jersey (N.J.A.C. 7:25-4.17(a)). The status of animal species is determined by the Nongame and Endangered Species Program (ENSP). The state status codes and definitions provided reflect the most recent lists that were revised in the New Jersey Register, Monday, June 3, 1991.

- D Declining species-a species which has exhibited a continued decline in population numbers over the years.
- E Endangered species-an endangered species is one whose prospects for survival within the state are in immediate danger due to one or many factors - a loss of habitat, over exploitation, predation, competition, disease. An endangered species requires immediate assistance or extinction will probably follow.
- EX Extirpated species-a species that formerly occurred in New Jersey, but is not now known to exist within the state.
- I Introduced species-a species not native to New Jersey that could not have established itself here without the assistance of man.
- INC Increasing species-a species whose population has exhibited a significant increase, beyond the normal range of its life cycle, over a long term period.
- T Threatened species-a species that may become endangered if conditions surrounding the species begin to or continue to deteriorate.
- P Peripheral species-a species whose occurrence in New Jersey is at the extreme edge of its present natural range.

- S Stable species-a species whose population is not undergoing any long-term increase/decrease within its natural cycle.
- U Undetermined species-a species about which there is not enough information available to determine the status.

Status for animals separated by a slash(/) indicate a dual status. First status refers to the state breeding population, and the second status refers to the migratory or winter population.

Plant taxa listed as endangered are from New Jersey's official Endangered Plant Species List N.J.S.A. 131B-15.151 et seq.

- E Native New Jersey plant species whose survival in the State or nation is in jeopardy.

#### REGIONAL STATUS CODES FOR PLANTS

- LP Indicates taxa listed by the Pinelands Commission as endangered or threatened within their legal jurisdiction. Not all species currently tracked by the Pinelands Commission are tracked by the Natural Heritage Program. A complete list of endangered and threatened Pineland species is included in the New Jersey Pinelands Comprehensive Management Plan.

#### EXPLANATION OF GLOBAL AND STATE ELEMENT RANKS

The Nature Conservancy has developed a ranking system for use in identifying elements (rare species and natural communities) of natural diversity most endangered with extinction. Each element is ranked according to its global, national, and state (or subnational in other countries) rarity. These ranks are used to prioritize conservation work so that the most endangered elements receive attention first. Definitions for element ranks are after The Nature Conservancy (1982: Chapter 4, 4.1-1 through 4.4.1.3-3).



## GLOBAL ELEMENT RANKS

- G1 Critically imperiled globally because of extreme rarity (5 or fewer occurrences or very few remaining individuals or acres) or because of some factor(s) making it especially vulnerable to extinction.
- G2 Imperiled globally because of rarity (6 to 20 occurrences or few remaining individuals or acres) or because of some factor(s) making it very vulnerable to extinction throughout its range.
- G3 Either very rare and local throughout its range or found locally (even abundantly at some of its locations) in a restricted range (e.g., a single western state, a physiographic region in the East) or because of other factors making it vulnerable to extinction throughout its range; with the number of occurrences in the range of 21 to 100.
- G4 Apparently secure globally; although it may be quite rare in parts of its range, especially at the periphery.
- G5 Demonstrably secure globally; although it may be quite rare in parts of its range, especially at the periphery.
- GH Of historical occurrence throughout its range i.e., formerly part of the established biota, with the expectation that it may be rediscovered.
- GU Possibly in peril range-wide but status uncertain; more information needed.
- GX Believed to be extinct throughout range (e.g., passenger pigeon) with virtually no likelihood that it will be rediscovered.
- G? Species has not yet been ranked.

## STATE ELEMENT RANKS

- S1 Critically imperiled in New Jersey because of extreme rarity (5 or fewer occurrences or very few remaining individuals or acres). Elements so ranked are often restricted to very specialized conditions or habitats and/or restricted to an extremely small geographical

area of the state. Also included are elements which were formerly more abundant, but because of habitat destruction or some other critical factor of its biology, they have been demonstrably reduced in abundance. In essence, these are elements for which, even with intensive searching, sizable additional occurrences are unlikely to be discovered.

- S2** Imperiled in New Jersey because of rarity (6 to 20 occurrences). Historically many of these elements may have been more frequent but are now known from very few extant occurrences, primarily because of habitat destruction. Diligent searching may yield additional occurrences.
- S3** Rare in state with 21 to 100 occurrences (plant species in this category have only 21 to 50 occurrences). Includes elements which are widely distributed in the state but with small populations/acreage or elements with restricted distribution, but locally abundant. Not yet imperiled in state but may soon be if current trends continue. Searching often yields additional occurrences.
- S4** Apparently secure in state, with many occurrences.
- S5** Demonstrably secure in state and essentially ineradicable under present conditions.
- SA** Accidental in state, including species (usually birds or butterflies) recorded once or twice or only at very great intervals, hundreds or even thousands of miles outside their usual range; a few of these species may even have bred on the one or two occasions they were recorded; examples include european strays or western birds on the East Coast and visa-versa.
- SE** Elements that are clearly exotic in New Jersey including those taxa not native to North America (introduced taxa) or taxa deliberately or accidentally introduced into the State from other parts of North America (adventive taxa). Taxa ranked SE are not a conservation priority (viable introduced occurrences of G1 or G2 elements may be exceptions).
- SH** Elements of historical occurrence in New Jersey. Despite some searching of historical occurrences and/or potential habitat, no extant occurrences are known. Since not all of the historical occurrences have been field surveyed, and unsearched potential habitat remains, historically ranked taxa are considered possibly extant, and remain a conservation priority for continued field work.

- SN** Regularly occurring, usually migratory and typically nonbreeding species for which no significant or effective habitat conservation measures can be taken in the state; this category includes migratory birds, bats, sea turtles, and cetaceans which do not breed in the state but pass through twice a year or may remain in the winter (or, in a few cases, the summer); included also are certain lepidoptera which regularly migrate to a state where they reproduce, but then completely die out every year with no return migration. Species in this category are so widely and unreliably distributed during migration or in winter that no small set of sites could be set aside with the hope of significantly furthering their conservation. Other nonbreeding, high globally-ranked species (such as the bald eagle, whooping crane or some seal species) which regularly spend some portion of the year at definite localities (and therefore have a valid conservation need in the state) are not ranked SN but rather S1, S2, etc.
- SR** Elements reported from New Jersey, but without persuasive documentation which would provide a basis for either accepting or rejecting the report. In some instances documentation may exist, but as of yet, its source or location has not been determined.
- SRF** Elements erroneously reported from New Jersey, but this error persists in the literature.
- SU** Elements believed to be in peril but the degree of rarity uncertain. Also included are rare taxa of uncertain taxonomical standing. More information is needed to resolve rank.
- SX** Elements that have been determined or are presumed to be extirpated from New Jersey. All historical occurrences have been searched and a reasonable search of potential habitat has been completed. Extirpated taxa are not a current conservation priority.
- SXC** Elements presumed extirpated from New Jersey, but native populations collected from the wild exist in cultivation.
- T** Element ranks containing a "T" indicate that the infraspecific taxon is being ranked differently than the full species. For example *Stachys palustris* var. *homotricha* is ranked "G5T? SH" meaning the full species is globally secure but the global rarity of the var. *homotricha* has not been determined; in New Jersey the variety is ranked historic.
- Q** Elements containing a "Q" in the global portion of its rank indicates that the taxon is of questionable, or uncertain taxonomical standing, e.g., some authors regard it as a full species, while others treat it at the subspecific level.

.1 Elements documented from a single location.

Note: To express uncertainty, the most likely rank is assigned and a question mark added (e.g., G2?).  
A range is indicated by combining two ranks (e.g., G1G2, S1S3).

IDENTIFICATION CODES

These codes refer to whether the identification of the species or community has been checked by a reliable individual and is indicative of significant habitat.

- |       |  |
|-------|--|
| Y     | Identification has been verified and is indicative of significant habitat.   |
| BLANK | Identification has not been verified but there is no reason to believe it is not indicative of significant habitat.  |
| ?     | Either it has not been determined if the record is indicative of significant habitat or the identification of the species or community may be confusing or disputed. |

Revised September 1981

## RECORD OF TELEPHONE CONVERSATION

DEF 27  
PG 1 OF 1DATE 7/7/92TO Tod Boyer of NTDEP Air Pollution 201-299-7700  
NAME/FILE NO.FROM Doretha DavisCLIENT/PROJECT ARCS IISUBJECT Microelectronics - SGS ThomsonCHARGE: DEPT. NO. 759 CLIENT SYMBOL EPA OFS NO. \_\_\_\_\_

DISCUSSION WITH Tod Boyer of NTDEP Air Pollution. The facility has greatly downsized from three buildings to one. The company makes electronic components. They used degreasing units for parts cleaning. A scrubber system is permitted but it doesn't operate. The company is trying to sell the scrubber unit. There are also boilers that were inspected. The NTDEP has no violations filed against SGS for emissions.

COMMENTS

BY

Doretha Davis  
NAMEG. Robert  
TITLE759  
DEPT. NO.

**REFERENCE 25**

REF 25  
PG 10F1

LATITUDE 40:31:40 LONGITUDE 74:34:24 1980 POPULATION

	0.00- 0.4	0.4- 0.8	0.8- 1.6	1.6- 3.2	3.2- 4.8	4.8- 6.4	SECTOR TOTALS
M							
1	0	0	2352	9709	11484	31120	54665
RING TOTALS	0	0	2352	9709	11484	31120	54665

SGS  
Somerset, New Jersey

Graphical Exposure Modeling System  
General Science Corporation  
April 1990

**REFERENCE 26**



## RECORD OF TELEPHONE CONVERSATION

DATE 6/18/92TO Maria Baratta ; DEP Library 609-633-0783  
NAME/FILE NO. 609-984-2249FROM Kara McGuirk - ChascoCLIENT/PROJECT ARCS II EPI-PASUBJECT Population Density, Somerset CountyCHARGE: DEPT. NO. 759 CLIENT SYMBOL EPA OFS NO. \_\_\_\_\_

## DISCUSSION WITH

1990 Census Data: 788.71 people/square mile  
in Somerset County

1990 Franklin Twp: Total Housing Units 17,080.  
Total Persons : 42,780.

∴ Average #people/house = 2.5

## COMMENTS

BY Kara McGuirk Geologist 759

**REFERENCE 27**

BY AD DATE 8/25/92SHEET 1 OF 1

CHKD. BY \_\_\_\_\_ DATE \_\_\_\_\_

OFS NO. \_\_\_\_\_

DEPT.  
NO. \_\_\_\_\_CLIENT APRS IIPROJECT S65SUBJECT Population Calculation SheetPopulation within 4 miles

0 - 1/4 = 36 employees = 36

1/4 - 1/2 = 26 houses x 2.5 avg people/house = 65

1/2 - 1

1 - 2

2 - 3

3 - 4

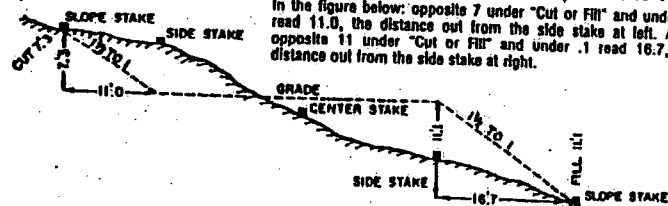
} GEMS

**REFERENCE 28**

# DISTANCES FROM SIDE STAKES FOR CROSS-SECTIONING

Roadway of any Width. Side Slopes 1½ to 1.

In the figure below: opposite 7 under "Cut or Fill" and under .3 read 11.0, the distance out from the side stake at left. Also, opposite 11 under "Cut or Fill" and under .1 read 16.7, the distance out from the side stake at right.



Cut or Fill	Distance out from Side or Shoulder Stake										Cut or Fill
	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	
0	0.0	0.2	0.3	0.5	0.6	0.8	0.9	1.1	1.2	1.4	0
1	1.5	1.7	1.8	2.0	2.1	2.3	2.4	2.6	2.7	2.9	1
2	3.0	3.2	3.3	3.5	3.6	3.8	3.9	4.1	4.2	4.4	2
3	4.5	4.7	4.8	5.0	5.1	5.3	5.4	5.6	5.7	5.9	3
4	6.0	6.2	6.3	6.5	6.6	6.8	6.9	7.1	7.2	7.4	4
5	7.5	7.7	7.8	8.0	8.1	8.3	8.4	8.6	8.7	8.9	5
6	9.0	9.2	9.3	9.5	9.6	9.8	9.9	10.1	10.2	10.4	6
7	10.5	10.7	10.8	11.0	11.1	11.3	11.4	11.6	11.7	11.9	7
8	12.0	12.2	12.3	12.5	12.6	12.8	12.9	13.1	13.2	13.4	8
9	13.5	13.7	13.8	14.0	14.1	14.3	14.4	14.6	14.7	14.9	9
10	15.0	15.2	15.3	15.5	15.6	15.8	15.9	16.1	16.2	16.4	10
11	16.5	16.7	16.8	17.0	17.1	17.3	17.4	17.6	17.7	17.9	11
12	18.0	18.2	18.3	18.5	18.6	18.8	18.9	19.1	19.2	19.4	12
13	19.5	19.7	19.8	20.0	20.1	20.3	20.4	20.6	20.7	20.9	13
14	21.0	21.2	21.3	21.5	21.6	21.8	21.9	22.1	22.2	22.4	14
15	22.5	22.7	22.8	23.0	23.1	23.3	23.4	23.6	23.7	23.9	15
16	24.0	24.2	24.3	24.5	24.6	24.8	24.9	25.1	25.2	25.4	16
17	25.5	25.7	25.8	26.0	26.1	26.3	26.4	26.6	26.7	26.9	17
18	27.0	27.2	27.3	27.5	27.6	27.8	27.9	28.1	28.2	28.4	18
19	28.5	28.7	28.8	29.0	29.1	29.3	29.4	29.6	29.7	29.9	19
20	30.0	30.2	30.3	30.5	30.6	30.8	30.9	31.1	31.2	31.4	20
21	31.5	31.7	31.8	32.0	32.1	32.3	32.4	32.6	32.7	32.9	21
22	33.0	33.2	33.3	33.5	33.6	33.8	33.9	34.1	34.2	34.4	22
23	34.5	34.7	34.8	35.0	35.1	35.3	35.4	35.6	35.7	35.9	23
24	36.0	36.2	36.3	36.5	36.6	36.8	36.9	37.1	37.2	37.4	24
25	37.5	37.7	37.8	38.0	38.1	38.3	38.4	38.6	38.7	38.9	25
26	39.0	39.2	39.3	39.5	39.6	39.8	39.9	40.1	40.2	40.4	26
27	40.5	40.7	40.8	41.0	41.1	41.3	41.4	41.6	41.7	41.9	27
28	42.0	42.2	42.3	42.5	42.6	42.8	42.9	43.1	43.2	43.4	28
29	43.5	43.7	43.8	44.0	44.1	44.3	44.4	44.6	44.7	44.9	29
30	45.0	45.2	45.3	45.5	45.6	45.8	45.9	46.1	46.2	46.4	30
31	46.5	46.7	46.8	47.0	47.1	47.3	47.4	47.6	47.7	47.9	31
32	48.0	48.2	48.3	48.5	48.6	48.8	48.9	49.1	49.2	49.4	32
33	49.5	49.7	49.8	50.0	50.1	50.3	50.4	50.6	50.7	50.9	33
34	51.0	51.2	51.3	51.5	51.6	51.8	51.9	52.1	52.2	52.4	34
35	52.5	52.7	52.8	53.0	53.1	53.3	53.4	53.6	53.7	53.9	35
36	54.0	54.2	54.3	54.5	54.6	54.8	54.9	55.1	55.2	55.4	36
37	55.5	55.7	55.8	56.0	56.1	56.3	56.4	56.6	56.7	56.9	37
38	57.0	57.2	57.3	57.5	57.6	57.8	57.9	58.1	58.2	58.4	38
39	58.5	58.7	58.8	59.0	59.1	59.3	59.4	59.6	59.7	59.9	39
40	60.0	60.2	60.3	60.5	60.6	60.8	60.9	61.1	61.2	61.4	40

"Rite in the Rain"  
ALL-WEATHER WRITING PAPER ®



Name SGS Thomson Micro  
Electronics

Address 25 Schoolhouse Road  
Somerset, NJ

Phone 908-563-6300

Project USEPA EPI-PA Region 2  
Assignment

"Rite in the Rain"—a unique all-weather writing surface created to shed water and to enhance the written image. Makes it possible to write sharp, legible field data in any kind of weather.

a product of

J. L. DARLING CORPORATION  
TACOMA, WA 98421-3696 USA

[illegible]

①

Machine Shop: water soluble oil.

\* Comment using frkon DMC in decreasing unit.

Poll barn closed down  
in March 1992

Small amt of flammables  
Freon

III-TCA

M-17 Methylene

Solvent - Marisol Recycling  
Everything else hauled by AETZ

Old Platino Area:

## Waste Streams

144-TCA 7/31/92

Flammables - 7-3-92

Down

[illegible]

①

Machine Shop: water-soluble oil.

\* Comment using from DMC in decreasing unit.

Poll barn closed down  
in March 1992

Small amt of flammables  
Freon

MI-TGA

M-17 Methylene

Solvent - Marisol Recycling  
Everything else hauled by AETZ

## Old Planting Area Waste Streams

III - TCA 7/31/92

Flammables - 7-3-92

A. Down

(2)

8-4-92

From 7/24/92 + 6/1/92

No perchloride has been used that they can recall or are aware of.

Ferric chloride is used

No longer hold permit w/ MCLUA. Last permit Dec 1990

When split w/ MSC in letter by Helen to USEPA. The Dec 1990 discharge permit was applied for. The old discharge permit was for both 75 and 100 Schoofhau Rd. address, as part of MSC.

Store in Plating Area (Ni+As)  
Non hazardous Copper  
Soln and basic + acids pellets

DDown

(3)

8-4-92

granular carbon

Other chemicals:

A2 Developer

Chromium etchant / Etching

Liquid Developer

Hydrochloric Acid-Clean etcher

2-propanol 8.45qt

transone 100

All chemicals are hand transferred to storage area from work area

Photo 1 + 2: Plating Area  
Photo 1 Waste stream drums

Photo 2: Non hazardous  
drum and stock  
shelves

30 gal tanks had pan  
under to catch materials

DDown

See 28  
At 308



(4)

8-4-92

Has readings. Thus = 0

Vents - non-purified

more of a safety feature

Do drums have been sealed

Machin Shop - Cutlery are

Aluminum - disposed of

w/ garbage. (?)

Etching Area

No drums all collected  
in buckets

Ferrachloride mixed

w/ 50 gal water + 2 gal

HCl to dispose when

spent.

Amplifying Area

only kept in operation

cont. manually

Below

8-4-92

(5)

Collected all down water  
epoxys

Drums - none - no

Went for aluminum

Store (essentially DHS

which is from

Pluto 3 Regulator unit

Pluto 4

Continues from circulation

Pumped out every 2-3

months and banded

thus = 1 ppm

Bringing from

Methuene Chloride and

Sprayer was turned

Below

Ref 28 Pg 4 of 13

⑥

8-4-92

Amisal: xylene, toluene  
MEK, Ethyl benzene, oil  
polyurethane

No droppings from  
sprayer particles very  
small

Photo 5 Sprayer Unit

Freezing + Heating Machine  
Room

End indoor tour.

Wells put in last year  
More put in

1989: Purchased some holes.  
Weg Siemens before S65  
purchased  $\approx$  100 yds of sand  
removed by S65

DDown

⑦

8-4-92

OLN - DRUM  
parking

Office

major office  
area

2A 2B 2 Shallow Fill  
OLD STORAGE  
STORAGE

MW-3 not locked; open borehole photo  
MW-1 locked photo

DDown

11-28-88  
Pg 5 of 13

⑧

8-4-92

# Storage Barn

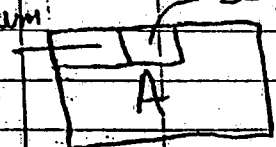
No chemicals in barn  
empty drums  
clean drums

330 empty plastic unguates  
5 empty raw material drums  
10 empty general DMS drums  
6 empty clean drums

OVA testing done in storage  
barn thru expansion  
joints. From nothing.  
Supplied by Hargy

55gal drum  
Ferric  
chloride

55gal unknown  
Sodium bromide  
possibly  
gone



55gal drum - solid left in  
sewer. (Non-haz)

A  
B

Down

⑨

8-4-92

B - is machine shop

D - empty

old storage area  
was used by SCS

3 Buildings total

Well water + city water  
Pumped thru lift stations  
and treated by city and  
one treated waste. then  
serves.

11:00 Finish at 25 Schoolhouse

Siemens owns 50 acres  
at 14 Schoolhouse road

Creek to east

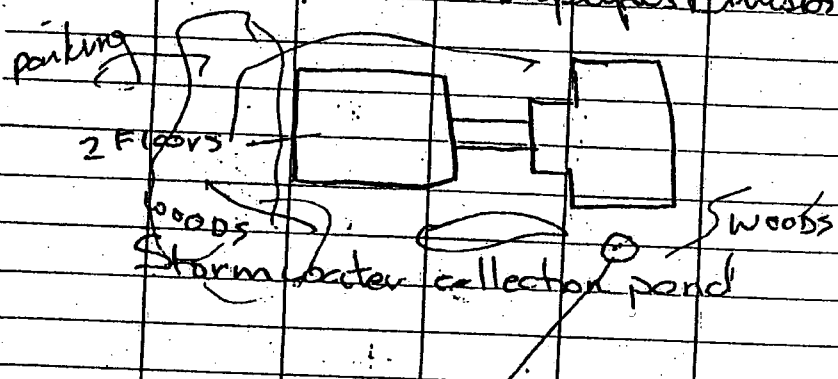
First floor water table

Net 28  
pg 6 of 13

⑩

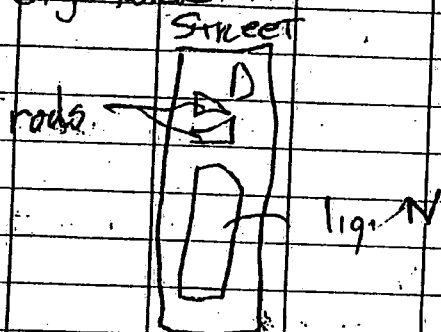
8-4-92

2ND Floor: Amplifier Division



① Don't know cement pad w/ PVC 1" pipe attached off drainage ways for lawn liquid hydrogen gas (tank)

liquid nitrogen for empty big tank



Down

8-4-92

HCl

neutralizer Storage

⑪

50% NaOH Fence

water

Photo 12 + 13 Neutralization Plant  
Water Purifying - No waste  
Reverse osmosis

DI Water

RO Water

Treatment  
No chemical storage

14 Schoolhouse

① Sanitary lanes

11:45 Meet w/ John Wypienkowski to tour 14 Schoolhouse Road.

Down

pg 104 13

(12)

8-4-92

Robert Friedman at  
Siemens Env./Components Div.

Siemens investment (Johns Bass)  
Garry L. Fenimore  
813-723-2545

The site tour of Mt Schoofhouse  
Road has been delayed till  
next Wednesday at 2:30  
w/ John Wyglendowski

11:45 The site tour is complete  
with the crew of:

Harry Wister (SGS)  
Helen Yelto (SGS)  
D. Downs (Ebasco)  
K. McGuirk (Ebasco)

12:00 Break for lunch. D. Downs and  
K McGuirk to hotel to pick up  
Federal Express and eat  
lunch

D. Downs

(13)

8-4-92

13:30 Return to SGS to  
discuss site activities  
w/ Harry Wister (SGS)  
and Helen Yelto (SGS)  
K. McGuirk and D.  
Downs present.

### Misc. Information

- Waste Chemical Storage Area  
dimensions 82' x 64'
- AETC hauls off most <sup>haz</sup> waste
- Marisol hauls off ferric chloride
- Aluminum is recycled by Kline Metals  
of Manville (Brass, Copper & Aluminum)
- Received last manifest for  
mixed <sup>waste</sup> ~~waste~~ and perchloride
- Saw 5 monitoring wells onsite

D. Downs

(14)

8-4-92

- The DOH files indicate spill in 1983 with dichlorobenzene. This compound came from the undocumented spill of J-100 stripper by Siemens. The Maintenance man <sup>(Lee)</sup> who was around at this time verified this spill and also mentioned a spill of TCA after the J-100 stripper was spilled. The liability for cleaning this up is between Siemens and the state. Siemens took this liability responsibility when <sup>JP</sup> after selling the property to SGS.

- Three (3) ECRA reports were completed at the facility. The 1st was done on both plants on each side of Schoolhouse road.

J. Don

(15)

8-4-92

The 2nd ECRA was done at the South Bldg only.

The 3rd ECRA has the North Bldg involved.

All (3) reports are being sent to Ekasco (Chicago)

- In the <sup>North</sup> South Bldg, a Gallium Arsenide clean-up was completed. The raw process material Arsenide Trichloride was left behind when the process ended. All of this material was removed. Cleanup Nov 89 - Mar 90.

- All gallium has been removed from site. (roll off)

- Mike Doyle from ECRA group was involved in this. He left in 1988.

J. Don

11/21/92  
10:09 AM  
13

(16)

8-4-92

- An audit by Mark Scuders the Case Manager of NJDEP was done
- Environmental Impact Statement (EIS) done for process bldg on South Plant was approved and addition built (1986?)
- A total of 5 building are on site; trailer, storage shed; north facility; south facility process bldg.
- Scrubber unit is still on site but has never been used. They are in the process of selling it.
- The facility has two private wells.  
W-1 300'  
W-2 350' (south side of street)

J Downs

(17)

8-4-92

- Violation, April, 1988 of not notifying landfill of wastes to be hauled
- UST for diesel for heating still at site.
- Air inspector, Tod Boyer, was just at <sup>300</sup> site the week prior. He informed them that they needed a permit for their degreaser unit.
- Lan Associates was consultant doing work<sup>DD</sup> at site for Siemens

### Information being Sent

- 1) ECRA reports (1-3)
- 2) Purchasing / Inventory list

J Don



(18)

8-4-92

- 3) Monitoring Well (name + numbers)
- 4) Last Water data from private wells. Checked annually for drinking water quality.
- 5) UST certificate # - Siemens will have to supply.

- Well Water Survey was completed by Siemens

15:00 Monitor with minimum dust monitor.

Machine Shop .01

Storage Area .00

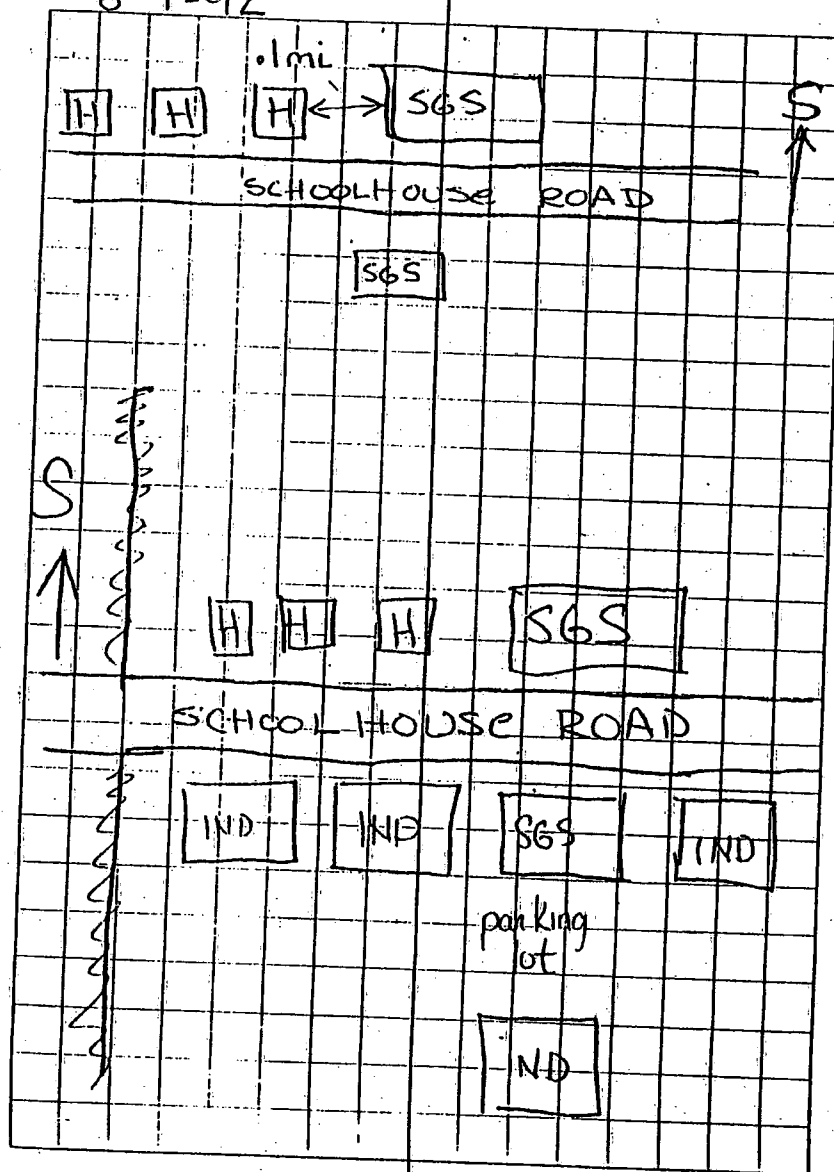
Instrument was zeroed prior to use.

16:00 Drive around site area to observe surroundings

DDown

(19)

8-4-92



DDown



8-4-92



8-12-92

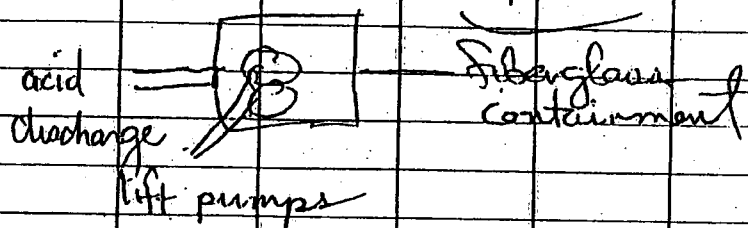
21

neutralization discharge permit.  
went w/ SGS. They are  
planning to close the  
out. Selling product inside  
tank.

DD

(22)

Lift Station:



Toxic Gases: Arsenic + Cyanide  
monitoring system

Galvanic Arsenic process  
building is completely  
abandoned.

raw - HCl and NaOH (caustic soda)  
is being sold; rinse from  
these tanks is being  
neutralized

ET-1 received wastewater  
neutralize to between 6-8 pH  
a third pH is taken; if  
passes discharge through

ET-1

23

Permit; if not goes to  
lift station back to ET-1

Franklin Township from  
Monroe County Authority  
for water permit.

liquid N<sub>2</sub> and evaporators.

locators for grounding grid  
Sanitary and storm water  
detention pond

City water to DI water for  
clean room

All contained (each lift station)  
Old neutralization system.  
1986 Shut down

Drains closed off in plating room  
(chemical area); they used to  
have a discharge permit for them  
in North Bldg.

ET-1

Ref. 201-130513

**REFERENCE 24**

**REFERENCE 29**

BY DD DATE 8/31/92SHEET 1 OF 1

CHKD. BY \_\_\_\_\_ DATE \_\_\_\_\_

OFS NO. \_\_\_\_\_ DEPT. NO. \_\_\_\_\_

CLIENT \_\_\_\_\_

PROJECT ARCS IISUBJECT Drinking Water Population Calculation Sheet - SBSPopulation drinking from wells

0-1/4 } Well Survey = 36  
 1/4-1/2 } = 4 wells x 2.5 <sup>avg</sup> people/house = 10  
 1/2-1 = 3252  
 1-2 = 3298  
 2-3 = 3298  
 3-4 = 3298

The area distance of 4 miles is contained within the Franklin Township boundary. The Millstone River and Raritan River and the Delaware and Raritan Canal form a hydraulic barrier to the north and west of the site.

Total Population of Franklin Township = 42,780  
 Total # of services connected to Franklin public water (from intakes) is 11,836.

Avg # people per house in Franklin Township = 2.5

11,836 Services x 2.5 people/service = 29,590 on public water from intake -

Total Population 42,780  
 - People Served 29,590  
 People on Wells 13,190  
 - Known Ponds Wells 46 (36 + 10)

13,190 ÷ 4 miles = 3298/mile

1/2-1 = 3298

- 46 (Known wells in 1/2 mile)

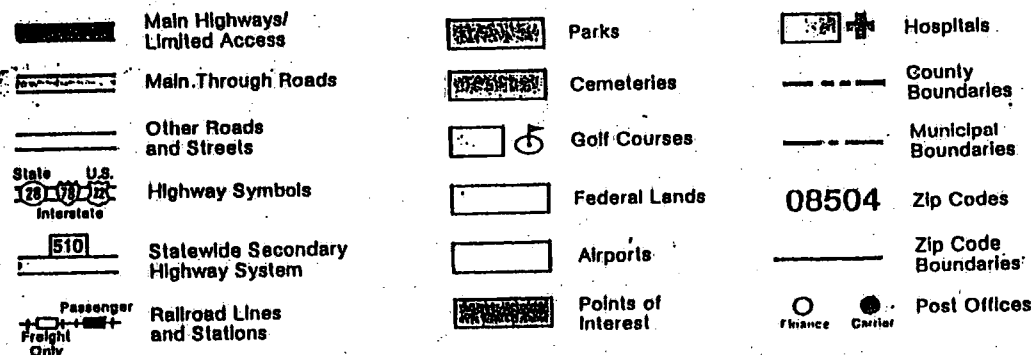
3252 people on wells (1/2-1)

**REFERENCE 30**

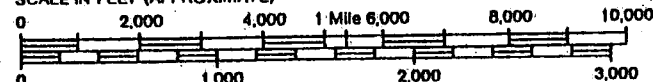
# Hagstrom map of Somerset County

## New Jersey – (Upper Half)

Size: 34" x 43"



SCALE IN FEET (APPROXIMATE)

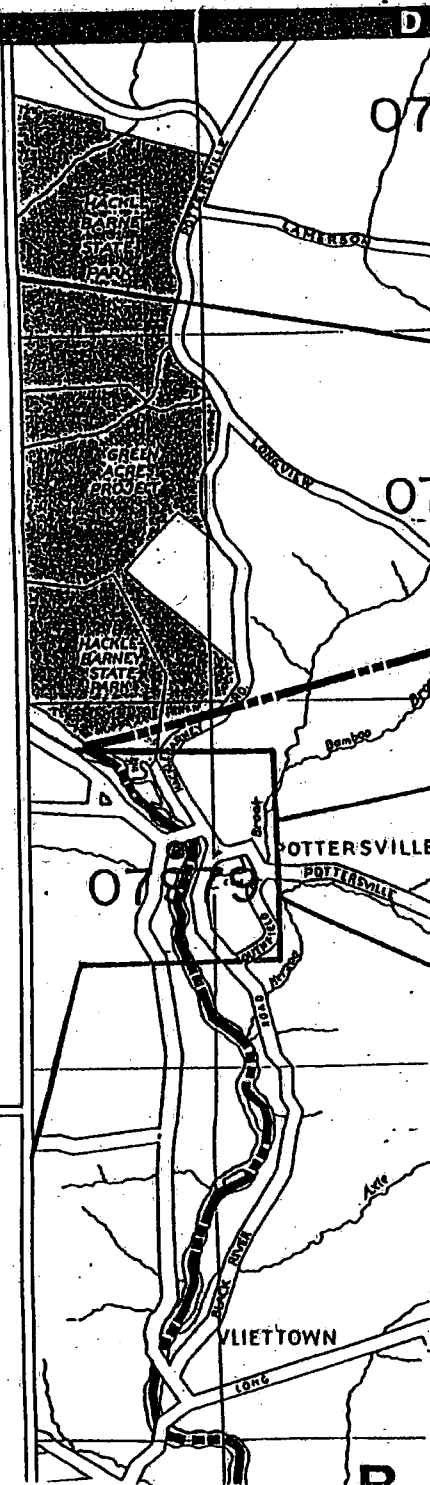


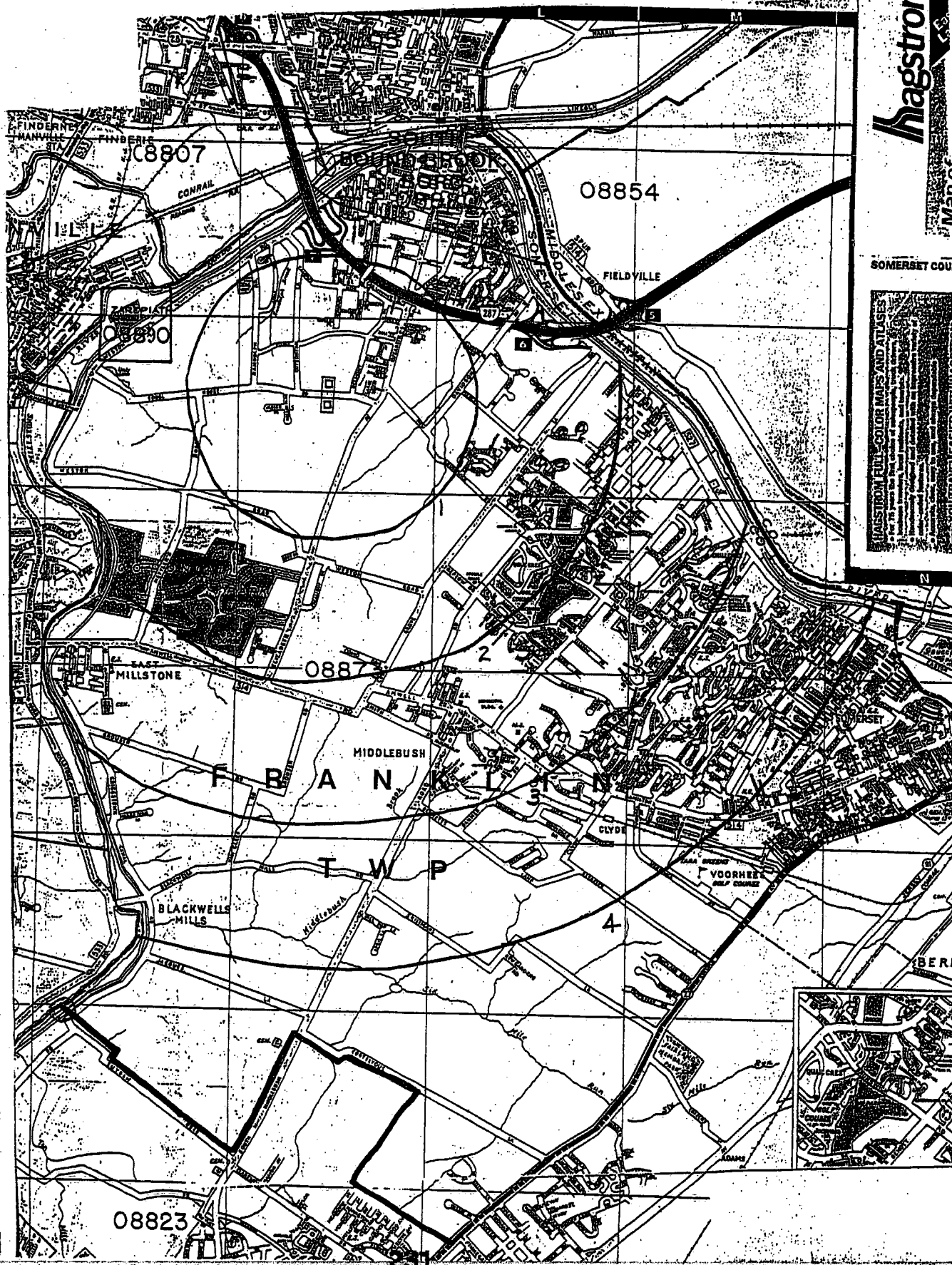
SCALE IN METERS (APPROXIMATE)

Copyright 1991 Hagstrom Map Company, Inc., 48-35 54th Road, Maspeth, NY 11378

### Index to Places

Place	Indexed Under	Grid	Place	Indexed Under	Grid
Amwell	Montgomery Twp	B 18	Mine Brook	Bernardsville Boro	G 4
Basking Ridge	Bernards Twp	J 3	Montgomery	Hillsborough Twp	B 18
Bedminster	Bedminster Twp	F 6	Mount Bethel	Warren Twp	L 7
Belle Meade	Montgomery Twp	F 18	Mount Horeb	Warren Twp	J 8
Bernardsville	Bernardsville Boro	J 3	Neshanic	Hillsborough Twp	C 15
Blackwells Mills	Franklin Twp	J 16	Neshanic Station	Branchburg Twp	C 14
Blawenburg	Montgomery Twp	D 19	North Branch	Branchburg Twp	E 9
Blazers Corner	Bernardsville Boro	J 3	North Branch Sta.	Branchburg Twp	E 9
Bradley Gardens	Bridgewater Twp	F 11	Peapack	Peapack-Gladstone Boro	E 4
Bridgpoint	Montgomery Twp	F 18	Plainville	Montgomery Twp	E 18
Burnt Mill	Bedminster Twp	E 7	Pleasantview	Hillsborough Twp	F 16
Centerville	Branchburg Twp	B 12	Pluckemin	Bedminster Twp	F 7
Chimney Rock	Bridgewater Twp	K 10	Pottersville	Bedminster Twp	D 3
	Hillsborough Twp	A 15	Rock Mill	Hillsborough Twp	B 18


 ret 30  
 p1 of 2



**hagstron**  
Map

SOMERSET COU

HAGSTROM FULL-COLOR MAPS AND ATLASES  
The Hagstrom Full-Color Maps and Atlases are the most complete and accurate maps of the United States. They are published in a variety of sizes and formats to meet the needs of all map users. The maps are printed on high-quality paper and are available in both printed and digital formats. The Hagstrom Full-Color Maps and Atlases are the most complete and accurate maps of the United States. They are published in a variety of sizes and formats to meet the needs of all map users. The maps are printed on high-quality paper and are available in both printed and digital formats.



**REFERENCE 31**

## RECORD OF TELEPHONE CONVERSATION

ret 31  
p1 of 1DATE 2/18/92TO Chris Budock of Franklin Township Tax Collectors Office 908-873-2  
NAME/FILE NO.FROM Doretha L. DoreCLIENT/PROJECT ARCS II EPI - PASUBJECT Water SupplyCHARGE: DEPT. NO. 759 CLIENT SYMBOL EPA OFS NO. \_\_\_\_\_

DISCUSSION WITH Chris Budock of Franklin Township Tax Collectors Office. The total number of services connected in Franklin Township is 11,836. There are maps available at the Tax Collectors office which will show services hooked up in the area. These maps must be viewed in their offices. Also, the maps are based on lot & block numbers.

## COMMENTS

These hook-ups to public water can not be delineated between the three companies that supply water.

BY Doretha L. Dore Subject 759  
NAME TITLE DEPT. NO.

**REFERENCE 32**

# RECORD OF TELEPHONE CONVERSATION

RET 32  
P 1 of 1

DATE 8/31/92

TO Mrs. Norman Fisher - 908-560-8209  
NAME/FILE NO. DD 0926

FROM Doreen L. Dumas

CLIENT/PROJECT ARCSTI

SUBJECT Drinking Water

CHARGE: DEPT. NO. 759 CLIENT SYMBOL EPA OFS NO. \_\_\_\_\_

DISCUSSION WITH Mrs. Norman Fisher at 21 Schoolhouse Road. The residence does have a well. The well is not used for drinking water.

COMMENTS

BY Doreen L. Dumas Gen. Agent 759  
NAME TITLE DEPT. NO.

**REFERENCE 33**

7  
1-7

**T E S I I I**

**TECHNICAL ENFORCEMENT SUPPORT  
AT HAZARDOUS WASTE SITES**

**U.S. EPA CONTRACT NO. 68-01-7331**

**CDM Federal Programs Corporation**

REVISED DRAFT REPORT  
COMPLIANCE EVALUATION INSPECTION  
MICROWAVE SEMICONDUCTOR CORPORATION  
SOMERSET; NEW JERSEY

Prepared for

U.S. ENVIRONMENTAL PROTECTION AGENCY  
Office of Waste Programs Enforcement  
Washington, D.C. 20460

EPA Work Assignment No.	: 591
EPA Region	: II
Site No.	: NJD 044655140
Contract No.	: 68-01-7331
CDM Federal Programs	
Corporation Document No.	: T591-R02-DR-CCHY-3
Prepared By	: PRC Environmental Management, Inc.
Work Assignment Project Manager	: Eddy S. Lin
Telephone Number	: (312)856-8700
Primary Contact	: Ton Moy
Telephone Number	: (212)264-1785
Date Prepared	: November 22, 1988

(WP2/31)

(Master/6)

**MICROWAVE SEMICONDUCTOR CORPORATION**  
**SOMERSET, NEW JERSEY**

**LAND DISPOSAL RESTRICTION INSPECTION  
AND  
COMPLIANCE EVALUATION INSPECTION**

**REVISED DRAFT REPORT**

**TES III**

Prepared for

**U.S. ENVIRONMENTAL PROTECTION AGENCY**  
**Office of Waste Programs Enforcement**  
**Washington, D.C. 20460**

Work Assignment No.	:	591
EPA Region	:	2
Site No.	:	NJD 044655140
Date Prepared	:	November 1, 1988
Contract No.	:	68-01-7331
PRC No.	:	026-0591-00
Prepared By	:	PRC Environmental Management, Inc. (Eddy S. Lin)
Telephone No.	:	312/856-8700
EPA Primary Contact	:	Ton Moy
Telephone No.	:	212/264-1785



2.2 RCRA REGULATORY STATUS

MSC stated that it submitted its original notification as a hazardous waste generator and a treatment/storage/disposal (TSD) facility, and subsequently submitted a RCRA Part A permit application for its TSD activities. However, MSC could not locate copies of its notification or Part A permit application and, as a result, PRC was unable to determine the dates that MSC submitted these forms or what TSD activities were included on its Part A permit application. In January 1983, MSC notified EPA that it was a generator only. EPA modified MSC's RCRA status to generator only, as noted in an undated letter.

MSC also operates two treatment processes that are exempt under RCRA -- a solvent recovery process and an elementary neutralization unit. MSC has discharge permit (No. 07006), which includes discharge limitations and monitoring requirements, from the Middlesex County Utilities Authorities (MCUA) to discharge the effluent from the elementary neutralization unit to the MCUA Treatment Works.

2.3 HAZARDOUS WASTE MANAGEMENT

MSC generates hazardous wastes from degreasing, recovery, washing, cleaning, plating, and etching operations. The wastes generated from these operations are described in the following paragraphs.

MSC uses freon in a vapor degreaser and in other degreasing operations. MSC recently began to recover the spent freon in a distillation unit; however, to date the unit has not generated any still bottoms. MSC designates the spent freon as F001. MSC also uses trichloroethane and flammable liquids (isopropyl alcohol, acetone, and methanol) to wash transistors. MSC designates these wastes as F001 and F003, respectively. In addition, MSC occasionally uses other solvents (designated as F005) while it uses up old inventory. MSC has determined that all the spent solvents exceed the applicable treatment standards based on its knowledge of the product and the process generating the waste and based on analytical results provided by the facility where MSC sends the spent solvents. These spent solvents are accumulated in 55-gallon containers prior to shipment off-site to Pride Solvent and Chemical in West Babylon, New York (EPA I.D. No. NYD 057722258) and Marisol in Middlesex, New Jersey (EPA I.D. No. NJD 002454544). PRC examined MSC's 1987

NEF 33  
Pg 5 of 7

Annual Report and confirmed that 2,418 gallons of F-solvent waste was generated and shipped off-site in 1987.

MSC generates two types of gallium arsenide waste. First, MSC generates gallium arsenide-contaminated materials, such as paper and gloves, from cleaning during manufacturing operations. MSC has determined that this waste is not a liquid and, thus, is not a California List waste. Second, MSC generates gallium arsenide waste from washing the transistors. MSC has determined that this waste is a liquid and exceeds the concentration level for arsenic and, thus, is a California List waste. The Paint Filter Liquids Test (PFLT) was not used because the waste is obviously liquid. MSC designates these wastes as D004 (solid waste that exhibits the characteristic of EP Toxicity for arsenic). Both these wastes are accumulated in 55-gallon containers prior to shipment off-site to Chemical Waste Management in Newark, New Jersey (EPA LD. No. NJD 089216790). PRC examined MSC's 1987 Annual Report and confirmed that 605 gallons of gallium arsenide waste was generated and shipped off-site in 1987.

MSC occasionally generates gold plating waste, which it designates as D002 (solid waste that exhibits the characteristic of corrosivity). MSC has determined that this waste is a liquid and has a pH of less than 2.0 and, thus, is a California List waste. The determination that this waste is a liquid did not involve using the PFLT. This waste is accumulated in 5-gallon plastic containers prior to shipment off-site to Vanguard for metal recovery. PRC examined MSC's 1987 Annual Report and confirmed that no gold plating waste was generated and shipped off-site in 1987.

MSC also generates etching waste, which it designates as D002 and D007 (solid waste that exhibits the characteristic of EP Toxicity for chromium). This waste also contains nickel. MSC has determined that this waste is a liquid, has a pH of less than 2.0, and exceeds the concentration levels for chromium and nickel. Thus, this waste is a California List waste. However, the determination that this waste is a liquid did not involve using the PFLT. PRC examined MSC's 1987 Annual Report and confirmed that no etching waste was generated or shipped off-site in 1987.

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In addition, MSC generates a variety of low pH wastes that it discharges to its elementary neutralization unit. MSC has determined that these wastes are liquids and whether they have a pH of less than 2.0. However, the determination that these wastes are liquids did not involve using the PFLT. MSC has determined that these wastes do not exceed the concentration levels for any of the other California List constituents. If the wastes did exceed the concentration levels, the effluent from the elementary neutralization unit would exceed MSC's discharge limitations. MSC monitors the effluent for pH to verify that it is between 5.0 and 10.00 and thus, is no longer a California List waste.

MSC also occasionally generates waste oil, which is a hazardous waste in New Jersey. The waste oil is accumulated in 55-gallon drums prior to shipment off-site. PRC examined MSC's 1987 Annual Report and confirmed that no waste oil was generated or shipped off-site in 1987.

### 3.0 INSPECTION FINDINGS

The LDR and CEI inspection consisted of a site inspection and records review. To determine MSC's compliance, PRC used (1) a RCRA Land Disposal Restriction Inspection Checklist and (2) a New Jersey Department of Environmental Protection (NJDEP) Division of Hazardous Waste Management Hazardous Waste Inspection Report. The completed checklist and report are attached to this inspection report.

PRC inspected the facility on April 12, 1988. The following people were present during the inspection:

Audrey L. Shipley	PRC
Michael Doyle	MSC
Carolyn C. Siefried	NJDEP
Doug Greenfield	NJDEP

#### 3.1 SITE INSPECTION

During the site inspection, PRC observed the elementary neutralization unit, the solvent recovery process, and the container accumulation area. The observations noted about each are presented in the following paragraphs.

However, MSC does not keep copies of the notification forms that it sends and, thus, PRC could not verify that MSC had sent the notification forms. PRC examined a copy of the notification forms that MSC stated that it uses. The forms contained all the required information.

#### 4.0 COMPLIANCE EVALUATION

Based on the results of the LDR and CEI inspection at the MSC facility, PRC identified the following deficiencies. The corresponding regulatory requirement is noted in parentheses.

##### Management of Containers

- o MSC has accumulated containers of hazardous waste for longer than 90 days (N.J.A.C. 7:26-9.3(a)1).
- o MSC did not close three containers when not adding or removing hazardous waste (N.J.A.C. 7:26-9.3(a)2).
- o MSC did not date one container of hazardous waste with the date that accumulation began (N.J.A.C. 7:26-9.3(a)).
- o MSC does not inspect the container accumulation at least daily (N.J.A.C. 7:26-9.3(a)2).

##### Preparedness and Prevention Procedures

- o MSC has not conducted semi-annual drills involving all employees and the appropriate local authorities to test emergency response capabilities at the facility in accordance with the contingency plan and emergency procedures (N.J.A.C. 7:26-9.4(g)8).
- o MSC has not arranged to familiarize the local hospital with the properties of hazardous waste handled at the facility and the types of injuries or illnesses that could result from fires, explosions, or discharges at the facility (N.J.A.C. 7:26-9.6(f)4).

##### Contingency Plan

- o The contingency plan does not describe actions to respond to fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste or constituents (N.J.A.C. 7:26-9.7(a)).
- o The contingency plan does not describe arrangements agreed to by local fire and police departments, hospitals, contractors, or local emergency response teams (N.J.A.C. 7:26-9.7(e)).